



# Environmental Assessment and Programmatic Section 4(f) Evaluations

## Shiloh Road Corridor

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STPU 1031(2) Control Number 4666








**Environmental Assessment**  
and  
**Nationwide Programmatic Section 4(f) Evaluations**  
**SHILOH ROAD CORRIDOR**  
**STPU 1031(2)**  
(Control Number 4666)  
Yellowstone County, Montana

This document is prepared in conformance with the Montana Environmental Policy Act (MEPA, 75-1-201 MCA) requirements and contains the information required for an Environmental Assessment (EA) under the provisions of ARM 18.2.237(2) and 18.2.239. This EA is also prepared in conformance with the National Environmental Policy Act (NEPA) requirements for an Environmental Assessment under 23 CFR 771.119, and Section 4(f) of the United States Department of Transportation Act under 23 CFR 771.135.

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by the  
**United States Department of Transportation, Federal Highway Administration**  
and the

**Montana Department of Transportation**  
Cooperating Agencies:  
**United States Army Corps of Engineers**  
**United States Fish and Wildlife Service**  
**Montana Department of Environmental Quality**  
**Montana Fish, Wildlife and Parks**  
**City of Billings**  
**Yellowstone County**

Submitted by:

  
Montana Department of Transportation

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Reviewed and  
Approved for  
Distribution:

  
US Department of Transportation  
Federal Highway Administration

Date: 28 DEC 2006

The following persons may be contacted for additional information concerning this document:

Jean A. Riley, PE  
Environmental Services Bureau Chief  
Montana Department of Transportation  
2701 Prospect Ave.  
PO Box 201001  
Helena, Montana 59620-1001  
(406) 444-7228

Alan C. Woodmansey, PE  
Montana Division Operations Engineer  
Federal Highway Administration  
US Department of Transportation  
585 Shepard Way  
Helena, Montana 59601  
(406) 449-5302

**ABSTRACT:** The proposed action is to reconstruct an approximately 7.2 kilometer (km) (4.5 mile [mi]) section of Shiloh Road between Canyon Creek and Poly Drive on the western edge of the City of Billings in Yellowstone County, Montana. The purpose of the proposed project is to improve mobility and safety in the Shiloh Road corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements.

Comments on this Environmental Assessment are due by February 12, 2007, and should be sent to Jean Riley, Montana Department of Transportation (MDT), at the address above. This document may also be viewed on the MDT Web site at [www.mdt.mt.gov/pubinvolve/eis\\_ea.shtml](http://www.mdt.mt.gov/pubinvolve/eis_ea.shtml).



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Conversion Factors	
Metric	English
1 meter	3.281 feet
1 meter <sup>2</sup>	10.764 feet <sup>2</sup> or 1.195 yard <sup>2</sup>
1 kilometer	0.621 miles
1 hectare	2.471 acres
1 hectare = 10,000 meters	
1 kilogram	2.205 pounds
English	Metric
1 foot	0.305 meters
1 foot <sup>2</sup>	0.093 meter <sup>2</sup>
1 mile	1.609 kilometers
1 acre = 43,560 feet	0.405 hectares
1 pound	0.454 kg

The English measurements in this document are approximate and are always shown within parentheses.

## LIST OF ACRONYMS AND ABBREVIATIONS

+/-	approximately
AADT	average annual daily traffic
AASHTO	American Association of State Highway and Transportation Officials
ac	acre
ACM	asbestos containing material
ADA	Americans with Disabilities Act
AICP	American Institute of Certified Planners
APE	area of potential effect
BBWA	Billings Bench Water Association
BLM	US Bureau of Land Management
BMP	best management practice
BRR	Biological Resources Report
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CEI	cost effectiveness index
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CL	construction limits
CO	carbon monoxide
COE	US Army Corps of Engineers

CWA	Clean Water Act
dB	decibel
dba	A-weighted decibels
EA	environmental assessment
EB	eastbound
EIS	environmental impact statement
EO	Executive Order
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	US Department of Transportation – Federal Highway Administration
FONSI	finding of no significant impact
FPPA	Farmland Protection Policy Act
FR	Federal Register
ft	foot
GIS	Geographic Information Systems
GWIC	Ground Water Information Center
ha	hectare
in	inch
ISA	initial site assessment
km	kilometer
km/h	kilometers per hour
Leq(h)	dba equivalent noise level
LOS	level of service
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
m	meter
MBTA	Migratory Bird Treaty Act
MCA	Montana Code Annotated
MDA	Montana Department of Agriculture
MDEQ	Montana Department of Environmental Quality
MDT	Montana Department of Transportation
MDU	Montana-Dakota Utility
MEPA	Montana Environmental Policy Act
MET	(Billings) Metropolitan Transit
FWP	Montana Fish, Wildlife and Parks
mi	mile
mm	millimeter
MP	milepost
MPDES	Montana Pollutant Discharge Elimination System
MPO	(Billings) Metropolitan Planning Organization

mph	miles per hour
MS4	General Permits for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System
MSU	Montana State University
MT	Montana
MTNHP	Montana Natural Heritage Program
MUTCD	Manual on Uniform Traffic Control Devices
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NB	northbound
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NPP	Neighborhood Park and Playground
NRCS	US Department of Agriculture – Natural Resources Conservation Service
NRHP	National Register of Historic Places
PE	Professional Engineer
PL	Public Law
RACM	regulated asbestos containing material
RI	right-in (turn movement)
RO	right-out (turn movement)
ROW	right-of-way
RP	reference mile post
S	Secondary (as in Secondary Highway)
SAFETEA-LU	Safe, Accountable, Flexible & Efficient Transportation Equity Act - a Legacy for Users
SB	southbound
SHPO	Montana State Historic Preservation Office
SID	special improvement district
SIP	State Implementation Plan
SPA	Stream Protection Act
STPU	Surface Transportation Program Urban
SWPPP	Storm Water Pollution Prevention Plan
TMDL	total maximum daily load
TNM	Traffic Noise Model
TWLTL	two-way left-turn lane
USC	US Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service

USGS	US Geological Survey
UST	underground storage tank
WB	westbound
WB-20LM	a tractor and single trailer combination, total distance from the center of the front axle to the center of the rear-most axle of the trailer is approximately 20 m [66 ft]
WEMP	(Billings) West End Storm Drainage Master Plan



## SUMMARY

### Introduction

The Montana Department of Transportation (MDT) proposes to reconstruct an approximately 7.2 kilometer (km) (4.5 mile [mi]) section of Shiloh Road between Canyon Creek and Poly Drive on the western edge of the City of Billings in Yellowstone County, Montana (see Figure 1.1). The existing two-lane Shiloh Road, which was constructed in 1956, does not meet current MDT design standards for a principal arterial and is characterized by inadequate vehicle turning radii at intersections, narrow or non-existent shoulders, inadequate clear zones, deteriorating roadway conditions, and discontinuous pedestrian and bicycle facilities. In addition, the Shiloh Road corridor is currently nearing or exceeding capacity during peak traffic conditions at some intersections. This congestion will be exacerbated as traffic volumes from the anticipated growth are projected to increase between 26 and 54 percent between 2002 and 2027 depending on the location in the corridor.

### Purpose and Need

The purpose of the proposed project is to improve mobility and safety in the Shiloh Road corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements.

The following is a list of the specific needs for the proposed project:

- Need to improve roadway and intersection safety
- Need to improve roadway and intersection deficiencies
- Need to increase capacity
- Need to improve transportation system linkage
- Need to accommodate alternative modes of transportation

### Alternatives

#### **No Build Alternative**

The No Build Alternative is the current Shiloh Road facility, which is a two-lane City-classified arterial with 3.6-m (12-ft) travel lanes and shoulders of varied width (0 – 2.4 m [0 – 8 ft]). There are three major intersections without turn lanes (Central Avenue, Hesper Road, and Monad Road). Central Avenue was recently signalized without turn lanes, Hesper Road is a four-way stop, and Monad Road is stop-controlled on Monad. Traffic signals with auxiliary turn lanes exist at King Avenue and Grand Avenue intersections, and right and left turn lanes (with no traffic signal) exist at the entrance to ZooMontana as well as the Zoo Drive and Broadwater Avenue intersections. There would be no access management plan and any future access onto Shiloh Road would be considered through the City of Billings (City) and Yellowstone County (County) platting and/or access permitting process, as applicable. There would be no change in roadway or pedestrian conditions, and the pedestrian facilities would remain discontinuous. Routine maintenance of the facility would continue, but roadway deficiencies, insufficient capacity, and safety concerns would remain. The No Build Alternative does not improve safety or mobility in the corridor; and therefore, does not meet the purpose and need for the project.

## **Build Alternatives**

All build alternatives proposed for the Shiloh Road Corridor project provide for the reconstruction of Shiloh Road within the project limits in order to achieve the project purpose and address the project needs. All build alternatives include access management, intersection control, a corridor typical section (roadway and pedestrian/bicycle components), and design treatments.

For all build alternatives, the typical roadway section is an urban typical section. In general the proposed typical section would consist of the following elements. This typical section could vary depending on final design.

- 3.6-m (12-ft) travel lanes in each direction
- 0.6-m (2-ft) shoulders
- variable width raised median and/or turn lane
- curb and gutter on each side of the road
- 3.6-m (12-ft) turn lanes with deceleration length provided on Shiloh Road at signalized intersections and major access locations (not required for roundabouts)
- variable width sidewalk (1.6-m [5.3-ft] typical) on one side of the road (distance from the edge of pavement would vary)
- 3.0-m (10-ft) wide multi-use path on one side of the road (distance from edge of pavement would vary)

Four travel lanes (two in each direction) from Zoo Drive to Poly Drive would be required to accommodate 2027 traffic volumes. South of Zoo Drive only two travel lanes (one in each direction) are proposed due to lower traffic volumes.

Design treatments would include lighting (such as street lighting, lighting for raised medians, and possibly lighting for the multi-use path), landscaping, storm water management, and improved clear zones. For all build alternatives, an Access Management Plan would be developed for the Shiloh Road corridor including Shiloh Road and the streets crossing the corridor.

Upon completion of the project, maintenance of the roadway, street lighting, multi-use path and lighting, and landscaping would be the responsibility of various jurisdictions. The City, County, and MDT would enter into an agreement to formalize those maintenance responsibilities. It is expected that the City would maintain the newly constructed roadway between Zoo Drive and Poly Drive, and that MDT would continue to maintain Shiloh Road south of Zoo Drive. The City and County would be responsible for maintaining the landscaping, street lighting, new multi-use path and any new path lighting within their respective jurisdictions. The multi-use path would be maintained by the City if an easement or the right-of-way is transferred to the City. The County may enter into an agreement with the City to have the City maintain portions of the new path and any path lighting in the County. In addition, future development in the County could be annexed into the City. If annexation occurs, the maintenance costs and responsibilities could shift from the County to the City. Funding for the maintenance of the new street lights may come from a new Special Improvement District (SID). Under a SID, assessments would be spread upon the affected properties within the boundaries of the new SID as provided by State law.

The four build alternatives vary by type of intersection control and are as follows:

- Traffic Signals at Arterials Alternative
- Roundabouts at Arterials Alternative
- Traffic Signals at Arterials and Major Development Alternative
- Roundabouts at Arterials and Major Development Alternative

These intersection alternatives represent a range of seven access control locations (arterials only) to eleven access control locations (arterials and major development). The arterials identified in these alternatives are the cross-streets classified as arterials by the City.

The traffic signal and roundabout intersections would consist of the following elements:

#### Traffic Signals

- two travel lanes in the northbound and southbound direction on Shiloh Road approaches (except at Zoo Drive)
- one or two travel lanes on the east-west approaches as appropriate
- left-turn lanes on all four approaches
- right-turn lanes on approaches as necessary

#### Roundabouts

- two travel lanes in the northbound and southbound direction on Shiloh Road and in the roundabout (except at Zoo Drive - a single lane; and King Avenue - three lanes in 2027)
- one or two travel lanes on the east-west approaches as appropriate
- may include slip lane for Zoo Drive intersection and semi-slip lane for King Avenue intersection for some alternatives

Two alternatives, Traffic Signals at Arterials Alternative and Roundabouts at Arterials Alternative, considered intersection improvements for seven locations: Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue. Two alternatives, Traffic Signals at Arterials and Major Development Alternative and Roundabouts at Arterials and Major Development Alternative, considered intersection improvements at eleven locations: Zoo Drive, Hesper Road, JTL/County access, Montana Sapphire Drive, King Avenue, Monad Road, Central Avenue, Howard Avenue, Broadwater Avenue, Yegen property, and Grand Avenue.

On opening day (anticipated in year 2010) signals would not be installed at Zoo Drive under the Traffic Signals at Arterials Alternative because traffic volumes in the near future do not warrant the need for a signal. Under this alternative, the Zoo Drive intersection would be constructed in 2010, but the signal poles and signal would not be installed. On opening day, roundabouts would be installed at all seven intersections under the Roundabouts at Arterials Alternative.

Under the Traffic Signals at Arterials and Major Development Alternative, the Zoo Drive, JTL/County access, Montana Sapphire Drive, Howard Avenue, and Yegen property signals would not be installed on opening day. For the anticipated construction date of 2010, these intersections would provide full access, but the signal poles and signals would not be installed until traffic volumes warrant a signal. Under the Roundabout at Arterials and Major Development Alternative, Montana Sapphire Drive, Howard Avenue, and Yegen property roundabouts would not be installed on opening day. On opening day there would be a full-access median break at these locations. Even though traffic volumes at the JTL/County access are low, a roundabout would be constructed on opening day for safety reasons because of the trucks entering and exiting the site.

## Comparison of Alternatives Impacts

A comparison of the estimated potential impacts for the No Build Alternative and build alternatives is presented in Table S.1. All the build alternatives meet the project purpose to improve the mobility and safety in the Shiloh Road corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements. The build alternatives also address the project needs to improve roadway and intersection safety and deficiencies, capacity, and transportation system linkage; and accommodate alternative modes of transportation. The No Build Alternative does not meet the project purpose or needs.

Due to the additional lanes and corridor access management with intersection control, the build alternatives all provide an improved level of service (LOS) for traffic in the corridor, faster travel times, and anticipated reductions in intersection-related crash rates compared to the No Build Alternative. In general, the build alternatives with roundabouts would provide slightly better LOS and travel times and a reduction in anticipated intersection-related crash rates than the build alternatives with traffic signals. The Roundabouts at Arterials Alternative would have the fastest travel time because it has fewer full access locations than the Roundabouts at Arterials and Major Development Alternative. Access management in the corridor results in restrictions of left-turns in some locations and therefore a driver may need to make a u-turn. Roundabouts would provide a more convenient u-turn than traffic signals.

Due to the provision of a multi-use path and sidewalk from Poly Drive to the ZooMontana access road, and crosswalks at the intersections, the build alternatives provide improved safety for pedestrian and bicyclists compared to the No Build Alternative. Benefits of traffic signals compared to roundabouts include driver and pedestrian familiarity, and the visual and audible pedestrian cues from signals help pedestrians with disabilities and visual impairments.

In addition to the traffic and safety impacts associated with the proposed improvements in the build alternatives, community, economic, and environmental impacts are expected. Projected beneficial community impacts for all the build alternatives are similar and compared to the No Build Alternative include improved response times for emergency services, accommodation of growth outlined in community plans, consistency with local plans, and improved access to community facilities and businesses. Expected adverse impacts of the build alternatives include right-of-way (ROW) acquisition and impacts to residential and business properties, cultural properties (Billings Bench Water Association [BBWA] Canal and Snow Ditch), farmland, and noise. For the build alternatives, projected adverse impacts are similar except for ROW acquisition and business and residential impacts. Due to the additional turn lanes and increased length of deceleration lanes on the cross streets, the total amount of ROW required for the build alternatives with traffic signals is expected to be slightly greater than for roundabouts. Although several residences and outbuildings are located within the proposed ROW for the build alternatives, the footprint of the roundabouts place one more residence within the proposed ROW.

The likely business property impacts for the build alternatives are generally impacts to parking, access, landscaping, or ROW acquisition, except for JTL Group and Montana Sapphire Subdivision. Under the Traffic Signals at Arterials and Major Development Alternative, the proposed traffic signals at JTL/County access and Montana Sapphire would be relocated along with the roads accessing these signals. These relocations result in operations impacts at the JTL gravel pit and batch plant and impacts to commercial lots at Montana Sapphire Subdivision.

Projected minor environmental impacts associated with the proposed improvements are similar for all of the build alternatives and more adverse than the No Build Alternative. These projected impacts

include an increase in storm water runoff, wetland impacts, loss of vegetation, wildlife habitat disturbance, and impacts to two Section 4(f) properties (BBWA Canal and Snow Ditch). An expected beneficial environmental impact of the improved traffic conditions for the build alternatives is a decrease in vehicle emissions compared to the No Build Alternative.

### ***Preferred Alternative***

All build alternatives meet the project purpose and needs by improving mobility and safety within the Shiloh corridor. However, MDT and US Department of Transportation Federal Highway Administration (FHWA) have identified a Preferred Alternative. The Preferred Alternative includes eight roundabouts (see Figure S.1).

Modern roundabouts were selected over traffic signals because, for this corridor, roundabouts would provide:

- slightly better LOS,
- slightly reduced travel time,
- potentially greater reduction in crash rates and severity, and
- reduced ROW acquisition requirements.

The locations of the eight roundabouts are a combination of intersections identified in all of the build alternatives. Seven of the roundabouts are at the intersections with City-classified arterials as assessed in the Roundabouts at Arterials Alternative (Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue). The eighth roundabout is at the JTL/County access, which was assessed in the Roundabouts at Arterials and Major Development Alternative.

To promote through mobility, full access was limited to the seven City-classified arterials as shown in the Roundabouts with Arterials Alternative. The JTL/County access was included because it meets two criteria: it addresses a potential safety concern and it meets the one-half mile spacing typical of arterials.

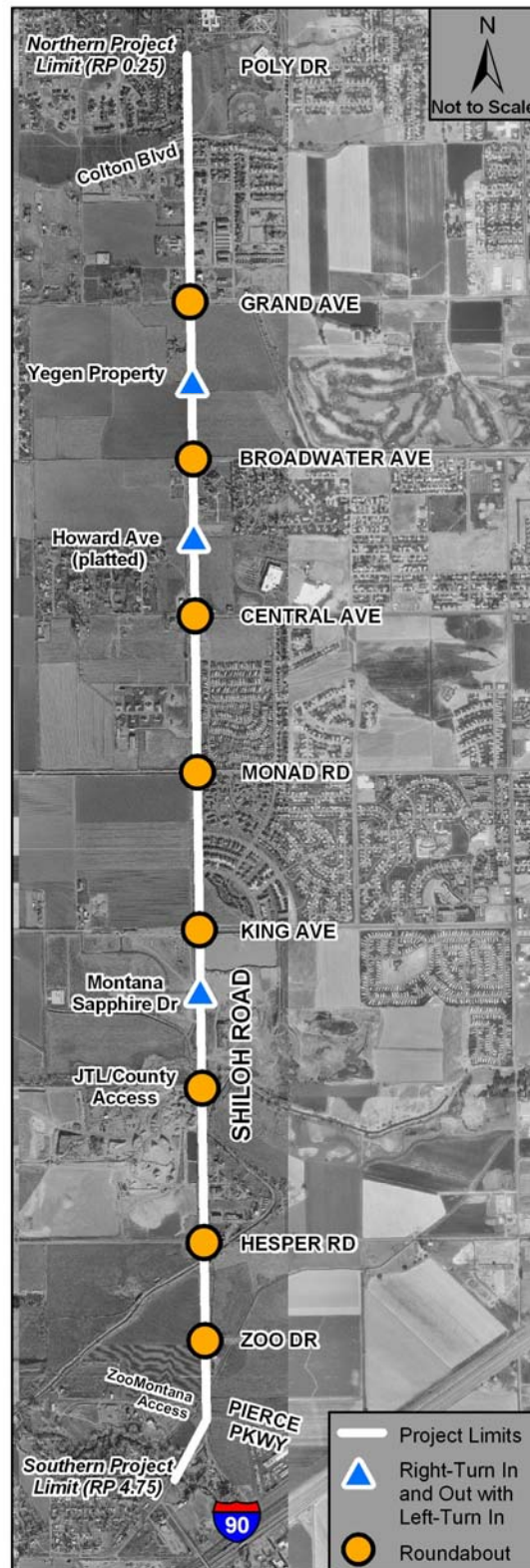
A roundabout at the JTL/County access would improve safety for all drivers on Shiloh Road by allowing the long gravel trucks to enter onto Shiloh Road safely. A roundabout at the JTL/County access would provide one-half mile spacing between King Avenue and Hesper Road. That one-half mile spacing is typical of the City-classified arterials in the corridor. Typical traffic engineering practice is to space arterials and major intersections at one-half mile intervals, thus providing a balance between access and mobility. The one-half mile spacing throughout the Shiloh Road corridor provides a reasonable distance for turn around movements (u-turns) where left-turns are restricted. The spacing also distributes traffic more evenly on cross streets or side roads, which optimizes intersection operations and maintains corridor mobility.

On opening day (anticipated in year 2010), roundabouts would be installed at the eight intersections discussed above. The other three locations identified for roundabouts under the Roundabouts at Arterials and Major Development Alternative would have three-quarter access (right-in, right-out, and left-in) under the Preferred Alternative.

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Figure S.1 Preferred Alternative



The Preferred Alternative is consistent with guidance offered by the Shiloh Road Corridor Project Advisory Committee and the Billings City Council. A copy of the September 11, 2006 Council Summary is included in Appendix B.

Elements of the Preferred Alternative are summarized below.

**Corridor Typical Section:** Urban Typical Section

Poly Drive to Zoo Drive – four 3.6-m (12-ft) travel lanes, median, curb and gutter. Between Poly Drive and Colton Boulevard, the median would be a two-way left-turn lane and south of Colton Boulevard, the median is raised and varies to accommodate the access management plan.

Zoo Drive to Pierce Parkway – transition to two 3.6-m (12-ft) travel lanes.

Pierce Parkway to Canyon Creek Bridge – transition to existing two-lane roadway.

Pedestrian and Bicycle Elements – Multi-use path and sidewalk from Poly Drive to the ZooMontana access road.

**Design Treatments:** Landscaping, lighting (such as street lighting, lighting for raised medians, and possibly lighting for the multi-use path), storm water management, and improved clear zones.

**Access Management Plan:** The Access Management Plan, consistent with MDT access control guidelines, is based on the “developed” access category for the corridor section between Poly Drive and Grand Avenue and the “intermediate” category south of Grand Avenue. The plan would support the Billings area street grid system, which has principal arterials on one mile spacing (Hesper Road, King Avenue, Central Avenue, and Grand Avenue) and minor arterials on half-mile spacing (Monad Road and Broadwater Avenue). Zoo Drive is also identified in City plans as a principal arterial because it connects to the interstate. The Access Management Plan for the corridor would consist of the following criteria:

- Full access intersections at all City-classified arterial public roads or one-half mile spacing. Roundabouts would be implemented for intersection control at the full access intersections: Zoo Drive, Hesper Road, JTL/County access, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue.
- A two-way left-turn lane would be implemented between Poly Drive and Colton Boulevard due to the numerous existing accesses.
- Three-quarter access would be implemented at appropriate existing locations and at appropriate one-quarter mile spacing intervals from major intersections. Three-quarter access provides a right-in, right-out and left-in movement.
- Right-in, right-out access would be implemented at other locations consistent with the locations or spacing guidelines identified in MDT’s Access Management Plan to be developed for this project.
- After the Access Management Plan is finalized, it would be implemented by MDT in conjunction with an access control resolution approved by the Montana Transportation Commission.
- Future access that is not constructed as part of this project would be considered through the City and County platting and/or access permitting process, as applicable.

**Intersection Control:** The roundabouts at Zoo Drive, Hesper Road, JTL/County access, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue would be implemented for opening day (anticipated in 2010).

### ***Preferred Alternative Impacts***

The projected impacts of the Preferred Alternative are similar to the Roundabouts at Arterials Alternative, except for the additional impacts associated with the inclusion of a roundabout at the JTL/County access. Additional adverse impacts, compared to the Roundabouts at Arterials Alternative, include an increase in corridor travel time of 18 seconds in both directions with a corresponding 2.4 km/h (1.5 mph) decrease in average speed; an additional \$400,000 to \$800,000 cost and approximately 0.1 ha (0.1 ac) of ROW acquisition; an increase of approximately 0.004 ha (0.05 ac) jurisdictional wetland impacts; and a slight increase in impervious surface resulting in a slight increase in runoff and disturbance of potential riparian habitat near Hogan's Slough.

Additional benefits of the Preferred Alternative, compared to the Roundabouts at Arterials Alternative, include an at-grade crossing at the proposed Hogan's Slough multi-use path, reduction in out-of-direction travel for several properties in the corridor including Montana Sapphire Subdivision and JTL Group. Out-of-direction travel results when motorists are required to find an alternate means of negotiating their intended movement (e.g. left-turn from private access or left-turn from Shiloh Road) at an intersection due to the presence of limiting physical features such as raised median or from policy (e.g. limited access that is enforceable through regulatory signs) and therefore motorists have to travel further or out of their way to get to their intended destination. Also, construction of a full-access intersection at the JTL/County access would result in a semi-slip lane at King Avenue not being required.

Projected impacts to the following topic areas would be the same as the Roundabouts at Arterials Alternative: Safety; Transit; Community Resources; Land Use and Local Plans; Energy; Cultural/Archaeological/Historical Resources; Noise; Contaminated Sites / Hazardous Materials; Farmlands; Irrigation; Visual Resources; Floodplains; Water Body Modifications; Vegetation; Air Quality; Section 4(f) Properties; and Construction Impacts. See Table S.1 for the estimated potential impacts of the Preferred Alternative.

### **Mitigation**

Recommended measures to mitigate the adverse effects of the Preferred Alternative are provided in Table S.2.

### **Permits and Authorizations**

The permits and authorizations listed below may be required for the Preferred Alternative:

- Section 402/Montana Pollutant Discharge Elimination System (MPDES) authorization from Montana Department of Environmental Quality (MDEQ) Permitting and Compliance Division. The MPDES permit requires a storm water pollution prevention plan (SWPPP) that includes a temporary erosion and sediment control plan. The erosion and sediment control plan identifies best management practices (BMPs), as well as site-specific measures to minimize erosion and prevent eroded sediment from leaving the work zone.
- Clean Water Act (CWA) Section 404 permit from the US Army Corps of Engineers (COE) for any activities that may result in the discharge or placement of dredged or fill materials in waters of the US, including wetlands.

- Compliance with Montana Fish, Wildlife and Parks (MFWP) – Fisheries Division Montana Stream Protection Act (SPA 124) is required for projects that may affect the bed or banks of any stream in Montana.
- Short-Term Water Quality Standard for Turbidity related to construction activity (318 Authorization) from the MDEQ – Water Quality Bureau for any activities that may cause unavoidable violations of state surface water quality standards for turbidity, total dissolved solids, or temperature.

In addition to the permits listed above, the following compliance is required.

- Compliance with mitigation stipulations of the Programmatic Agreement for Nationwide Section 4(f) Evaluation for Minor Impacts on Historic Sites.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Traffic</b>						
Traffic Patterns	Traffic volumes and congestion would increase on both Shiloh Road and side-streets that exit and enter on Shiloh Road.	Traffic would increase on Shiloh Road, but to a lesser degree than in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives.  Side-streets would carry more traffic than in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives.		Traffic would increase on Shiloh Road to a greater degree than the Traffic Signals or Roundabouts at Arterials Alternatives.  Side-streets would carry less traffic than the Traffic Signals or Roundabouts at Arterials Alternatives.		Similar impacts as Roundabouts at Arterials Alternative; however, semi-slip lane would not be required at King Avenue because some traffic would shift to new JTL/County access roundabout.
LOS at Major Intersections During PM Peak Hour in 2027	All intersections projected to operate at LOS E or F.	All signalized intersections projected to operate at LOS C or better.	Most roundabout intersections projected to operate at LOS B; Grand Avenue would operate at LOS C.	Same impacts as the Traffic Signals at Arterials Alternative.	All roundabout intersections projected to operate at LOS B.	Same impacts as Roundabouts at Arterials Alternative.
Travel Time and Average Speed (Between Canyon Creek Bridge and Poly Drive) in 2027 (NB/SB)	45.0/48.8 min. 10 km/h (6.1 mph)/ 9 km/h (5.6 mph)	9.3/8.6 min. 47 km/h (29.4 mph)/ 51 km/h (31.7 mph)	7.7/7.7 min. 56 km/h (34.5 mph)/ 59 km/h (36.5 mph)	10.2/9.3 min. 43 km/h (26.7 mph)/ 47 km/h (29.4 mph)	8.9/9.8 min. 50 km/h (30.8 mph)/ 50 km/h (30.9 mph)	8.0/8.0 min. 53.6 km/h (33 mph)/ 56.6 km/h (35 mph)
Consistency with <i>Billings Urban Area 2005 Transportation Plan</i> and MDT Design Guidelines for Achieving Minimum Acceptable LOS (LOS C)	Inconsistent, does not achieve LOS C or better.	Consistent, achieves LOS C or better.				



**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Access						
Access Management	No access management. 107 existing accesses in project area. New accesses would be per City and County platting and/or access permitting process.	Access management provided. Eliminated or consolidated 17 accesses (5 commercial, 7 field, 2 church, and 3 residential accesses). Accommodates approximately 12 new accesses (3 built under the proposed project and 9 built by others in the future). Access restricted to right-in and right-out or $\frac{3}{4}$ access except at seven signalized intersections or roundabouts.		Similar impacts as Traffic Signals at Arterials Alternative; however, traffic signals would be provided at four additional locations when signal warrants are met (JTL/County access, Montana Sapphire Drive, Howard Avenue, and Yegen property). JTL/County and Montana Sapphire existing access locations would be relocated.	Similar impacts as Roundabouts at Arterials Alternative; however, roundabouts would be provided at three additional locations when signal warrants are met (Montana Sapphire Drive, Howard Avenue, and Yegen property). Roundabout provided at JTL/County access on opening day to provide full access for long trucks.	Similar impacts as Roundabouts at Arterials Alternative; however, a roundabout would be provided at JTL/County access on opening day to provide full access for long trucks.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Access (cont.)						
Restricted Access Can Result in Out-of-Direction Travel	No change; minimal out-of-direction travel.	More out-of-direction travel than No Build Alternative. Restricted access would result in u-turns at signals or an alternate route to turn around.	More out-of-direction travel than No Build Alternative. Would be better than the Traffic Signals at Arterials Alternative because roundabouts offer more convenient u-turns.	Same impacts as Traffic Signals at Arterials Alternative; however, four additional intersections would offer more opportunities for full access onto Shiloh Road thereby reducing some out-of-direction travel.	Same impacts as Roundabouts at Arterials Alternative; however, four additional intersections would offer more opportunities for full access onto Shiloh Road thereby reducing some out-of-direction travel.	Similar impacts as Roundabouts at Arterials Alternative; however, one additional intersection (JTL/County access) would offer more opportunities for full access onto Shiloh Road thereby reducing some out-of-direction travel.
Public Streets	No change.	Full access provided at 20 streets. Access restricted at 10 streets. Provide full access for public roads north of Colton Boulevard.		Full access provided at 21 streets. Access restricted at 8 streets. Provide full access for public roads north of Colton Boulevard.		Same impacts as Traffic Signals or Roundabouts at Arterials Alternatives.
Private Access	No change.	Restrict most private accesses south of Colton Boulevard to right-in and right-out. Left-turns would be provided where appropriate and would be determined during final design and included as part of the Access Management Plan developed for the project. Provide full access for private accesses north of Colton Boulevard via a two-way left-turn lane.				
Consistent with MDT Guidelines for Access Management	Not applicable because no access management proposed.	Consistent throughout corridor except between Zoo Drive and Hesper Road (intersection spacing is less than ½ mile at this location).		Less consistent than Traffic Signals or Roundabouts at Arterials Alternatives because full-access spacing is less than ½ mile in more locations.		Same impacts as Traffic Signals or Roundabouts at Arterials Alternatives.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Safety</b>						
Intersection Safety	No change, crash occurrences likely to increase with higher traffic volumes. Drivers are familiar with intersection operations.	Anticipated reduction in intersection-related crash rates with new signalized intersection control and auxiliary lanes. Drivers are familiar with intersection operations.	Anticipated reduction in intersection-related crash rates with roundabouts greater than traffic signals; severity of crashes likely reduced due to slower speeds and no opposing traffic conflicts. Lack of driver familiarity with roundabouts.	Same impacts as Traffic Signals at Arterials Alternative.	Same impacts as Roundabouts at Arterials Alternative.	
Roadway Safety	No change, crash occurrences likely to increase with higher traffic volumes.	Anticipated reduction in roadway-related crash rates by controlling access, separation of opposing traffic, improving roadway condition, and improving clear zone.				
<b>Transit</b>						
Existing Routes	No impact.					
Future Routes	Future transit service on or across Shiloh Road impeded by traffic congestion during peak periods.	Future transit service on or across Shiloh Road would benefit from improved traffic flow during peak periods.				

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Pedestrians and Bicycles</b>						
Intersections	No change. Lack of crosswalks. Shorter crossing distances. No pedestrian phasing at existing signals. Visual and audible pedestrian cues from signals exist.	Safety improved by providing crosswalks. Larger turning radii create longer crossing distances than under the No Build Alternative. Drivers are required to yield to pedestrians. Pedestrian signals offer “protected” crossing time for pedestrians. Visual and audible pedestrian cues from signals improve safety for pedestrians with cognitive disabilities and visual impairments.	Safety improved by providing crosswalks. In general, total crossing distances are longer than under the No Build Alternative, but shorter than signalized alternatives; and pedestrian refuge areas enable pedestrians to consider one direction of traffic at a time. Drivers are required to yield to pedestrians. Because there are no signals, there is no “protected” crossing time. Safety of pedestrians with visual impairments and cognitive disabilities is reduced compared with the signalized alternatives due to lack of visual and audible cues.	Same impacts as Traffic Signals at Arterials Alternative.	Same impacts as Roundabouts at Arterials Alternative.	

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Pedestrians and Bicycles (cont.)						
Roadway Corridor	No change; discontinuous pedestrian/bicycle facilities and safety concerns would remain.	Sidewalks and multi-use paths provided along east and west sides of Shiloh Road from the entrance of ZooMontana to Poly Drive improve safety.				
Consistency with <i>Heritage Trail Plan</i>	No change.	Not consistent with grade-separated crossing recommendations. However, at-grade crossing provided at proposed Monad Road bikeway.	Not consistent with grade-separated crossing recommendations. However, at-grade crossings provided at proposed Monad Road bikeway, proposed Hogan’s Slough multi-use path (at JTL/County access), and proposed secondary bikeway at Howard Avenue.			Similar impacts as Traffic Signals or Roundabouts at Arterials Alternatives; however, an at-grade crossing at proposed Hogan’s Slough multi-use path (JTL/County access) would be provided.
Community Resources						
Schools, Churches, Hospitals, and Parks and Recreational Facilities	Increasing difficulty to access due to traffic congestion.	Proposed improvements would benefit vehicular and pedestrian and bicycle access and safety while accessing these resources. Parking lot impacts would occur at three churches. Minor impacts to Sharptail Park and other small park areas. Clydesdale Park impacted by multi-use path.				
Emergency Services	Decline of LOS could delay response time.	Improved LOS would improve response times over the No Build Alternative. Additional travel lanes would improve emergency vehicle passage.				

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Local and Regional Economics</b>						
Economic Growth	Could slow future commercial development due to limited transportation infrastructure and traffic congestion.	Would accommodate the growth that is predicted in the City and County plans for the year 2027.				
Overall Business Impacts	Adversely affected by increasing congestion.	Reduced congestion could benefit businesses along Shiloh Road.				
Specific Business Impacts	Adversely affected by increasing congestion. No direct impacts.	Potential impacts to Cetrone Photo Studio, Shiloh Veterinary Clinic, Holiday Convenience/Gas Station, Exxon Convenience/Gas Station, businesses located at 3925 Grand Avenue, Yellowstone Bank, Stockman Bank, Shiloh North Shopping Center, and Sylvan Nursery.	Similar impacts as Traffic Signals at Arterials Alternative except that the building at 3925 Grand Avenue would not be impacted by proposed ROW.	Greater impacts than Traffic Signals at Arterials because two additional properties would be impacted (JTL Group and Montana Sapphire Subdivision).	Similar impacts as Roundabouts at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative; however, there would be a reduction in out-of-direction travel for several properties in the corridor, including Montana Sapphire Subdivision and JTL Group.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Local and Regional Economics (cont.)						
Special Improvement District (SID)	No impact.	If a new SID is created to fund maintenance of new street lighting constructed as part of the project, the property owners within the SID boundaries would be assessed for the maintenance costs.				
Estimated Project Construction Cost (in 2009 dollars)	\$0.0	\$26.2–\$33.2 million	\$24.0–\$27.8 million	\$27.8–\$36.4 million	\$25.9–\$30.8 million	\$24.4–\$28.6 million
Land Use and Local Plans						
Land Use Change	No impact.	Adjacent agricultural, commercial, industrial, and residential land would be converted to transportation and recreation uses within proposed ROW and/or easements.				
Consistency with Land Use Plans	Inconsistent with land use plans except for the <i>Northwest Shiloh Area Plan</i> .	Consistent with <i>2003 Growth Policy Plan</i> , <i>West Billings Plan</i> and <i>Northwest Shiloh Area Plan</i> . Consistent with <i>West Billings Storm Drain Master Plan</i> with the following exception recommended by the City. The City intends to keep the storm water from Shiloh Road flowing in the existing closed conduit from Shiloh Road, running east on Grand Avenue until it reaches the Arnold Drain.  Consistent with <i>Heritage Trail Plan</i> except for providing grade-separated crossings at Monad Road, Hogan’s Slough, and Howard Avenue.				
Right-of-way (ROW) and Relocations						
ROW Acquisition and Multi-use Path Easement	N/A	11.6 ha (28.7 ac) ROW and 0.85 ha (2.1 ac) easement for multi-use path.	10.0 ha (25.0 ac) ROW and 0.85 ha (2.1 ac) easement for multi-use path.	11.5 ha (28.4 ac) ROW and 0.85 ha (2.1 ac) easement for multi-use path.	10.6 ha (26.2 ac) ROW and 0.85 ha (2.1 ac) easement for multi-use path.	10.2 ha (25.1 ac) ROW and 0.85 ha (2.1 ac) easement for multi-use path.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Right-of-way (ROW) and Relocations (cont.)</b>						
Potential Structure Impacts	No impact.	2 commercial structures within ROW (Shiloh North Shopping Center and businesses at 3925 Grand Avenue). 2 residential structures within ROW (2 townhomes). 6 secondary structures. 3 within ROW (outbuildings associated with Shiloh Village Mobile Home Park) and 3 within construction limits (1 outbuilding, 1 pumphouse, and 1 barn structure).	1 commercial structure within ROW (Samurai Gardens Restaurant). 3 residential structures within ROW (2 townhomes and 1 single-family). 6 secondary structures. 3 within ROW (outbuildings associated with Shiloh Village Mobile Home Park) and 3 within construction limits (1 outbuilding, 1 pumphouse, and 1 barn structure).	Same impacts as Traffic Signals at Arterials Alternative.	Same impacts as Roundabouts at Arterials Alternative.	



**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Energy						
Fuel and Energy Consumption	Increased idling due to congestion would result in additional fuel consumption.	Operation of signals and street lighting would require consumption of energy.  Fewer delays and congestion would result in less overall fuel consumption than the No Build Alternative due to reduced idling.	No traffic signals and the continuous traffic flow at roundabouts would result in less fuel and energy consumption than Traffic Signals at Arterials Alternative.	Similar impacts as Traffic Signals at Arterials Alternative; however, increased power requirements due to additional signals and lighting requirements at four additional locations.	Similar impacts as Roundabouts at Arterials Alternative.	
Cultural/Archaeological/Historical Resources						
Cultural/Archaeological/Historical Impacts	<b>No effect:</b> BBWA Canal, Bunkhouse, Big Ditch Canal, and Snow Ditch.	<b>No effect:</b> Bunkhouse and Big Ditch Canal. <b>No adverse effect:</b> BBWA Canal and Snow Ditch.				

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Noise						
Predicted Noise Level Increase (2002-2027)	3-6 dBA	3-10 dBA				
Facilities at the Impacted Receptor Locations	16 single-family residences 5 planned or proposed developments 12 town home buildings 4 assisted-living buildings 5 apartment buildings 30 mobile home residences	22 single-family residences 5 planned or proposed developments 18 town home buildings 4 assisted-living buildings 5 apartment buildings 2 park areas 30 mobile home residences 1 church 1 college			21 single-family residences 5 planned or proposed developments 18 town home buildings 4 assisted-living buildings 5 apartment buildings 30 mobile home residences 1 church 1 college	Same impacts as Traffic Signals or Roundabouts at Arterials Alternatives and Traffic Signals at Arterials and Major Development Alternative.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Contaminated Sites / Hazardous Materials						
Hogan’s Slough Bridge (treated timbers)	No impact.	Bridge materials would be salvaged or disposed of in accordance with applicable laws and regulations.				
Underground Storage Tanks (USTs)	No impact.	Potential impacts to USTs associated with Exxon Convenience Station. Impacts dependent on final design.	No impact.	Same impacts as Traffic Signals at Arterials Alternative.		No impact.
Shiloh Drain	No impact.	Potential soil contamination from material in fill excavated for drain.				
Removal of Structures or Excavation	No impact.	Potential soil contamination or asbestos containing materials (ACMs).				
Farmlands						
Direct Impacts to Prime and Important Farmland	No impact.	3.36 ha (8.31 ac)	2.97 ha (7.33 ac)	3.37 ha (8.32 ac)	3.15 ha (7.79 ac)	Same impacts as Roundabouts at Arterials Alternative.
Irrigation						
Irrigation Systems	No impact.	Major irrigation canals including BBWA Canal, Big Ditch Canal, and Canyon Creek Ditch would be perpetuated. Some realignment, relocations, replacement of conveyance mechanisms and appurtenances, and ditch terminations could be required.				

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Visual Resources						
Visual Quality	No change, would continue to be low-to-moderate. Inconsistent treatment of road shoulders, powerlines, and utilities would remain.	Visual quality would be similar to current conditions (low-to-moderate). Organized and consistent treatment of road shoulders, powerlines, and utilities. Some mature vegetation would be removed. Raised medians would provide additional opportunities for landscaping; unity and intactness. Rimrock views from roadway could be impeded by traffic signals.	Visual quality would be similar to Traffic Signals at Arterials Alternative (low-to-moderate). However, roundabouts provide an additional opportunity for landscaping, and Rimrock views from roadway would not be impeded by traffic signals because of roundabouts at intersections instead of signals.	Similar impacts as Traffic Signals at Arterials Alternative; however, visual quality would be slightly lower due to four additional signalized intersections.	Similar impacts as Roundabouts at Arterials Alternative.	

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Floodplains</b>						
Floodplains	No impact.	No encroachment into regulatory floodplain. No net change in hydrologic and hydraulic conditions and existing flooding potential at Hogan's Slough.				
<b>Water Resources/Quality</b>						
Groundwater or Public Drinking Water Supply Wells	No impact.					
Storm Water Runoff	No impact.	Increase in impervious surface area would be negligible when compared to the total amount of impervious surfaces in the project vicinity. Contamination effects of the existing roadway have also already been realized. Therefore, effects of storm water runoff would be negligible.				
Storm Water Management	No impact.	Potential utilization of Shiloh Drain to control flows at existing and proposed roadway crossings. Implementation of curb and gutter south of Hesper Road may require different collection system methods such as using adjacent vegetative area for filtration similar to the existing condition.				
<b>Water Body Modifications</b>						
Crossings	No impacts.	New bridge for multi-use path adjacent to existing BBWA Canal Bridge. BBWA Canal would be lined in concrete at new structure for maintenance purposes. Canyon Creek Ditch culvert, Hogan's Slough Bridge, and Snow Ditch culvert would be replaced.				
<b>Wetlands</b>						
Approximate Jurisdictional Wetland Impacts	No impacts.	1.0 ha (2.4 ac)	1.0 ha (2.5 ac)	1.0 ha (2.3 ac)	1.1 ha (2.8 ac)	1.0 ha (2.5 ac)
Non-Jurisdictional Wetland Impacts	No impacts.					

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
<b>Vegetation</b>						
Montana Species of Special Concern	No impact.					
Vegetation	No impact.	Loss of approximately 4.5 ha (11.1 ac) of riparian habitat. Approximately 260 mature trees would be removed. Potential increase in noxious weeds because of disturbing ground cover.	Loss of approximately 4.5 ha (11.1 ac) of riparian habitat. Approximately 245 mature trees would be removed. Potential increase in noxious weeds because of disturbing ground cover.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.	
<b>Wildlife and Migratory Birds</b>						
Montana Species of Special Concern	No impact.	No effect to western hognose snake. No effect to spiny softshell turtles. No effect to milk snakes.				
Wildlife/Migratory Birds	No impact.	Minor potential impacts to wildlife and habitat, but unlikely to contribute to trends toward federal listing or loss of viability of any wildlife or bird species. Potential disturbance to migratory birds at Hogan's Slough during bridge removal, if nesting under bridge.		Similar impacts as Traffic Signals at Arterials Alternative; however, slightly greater loss and disturbance of potential habitat in riparian areas because of increased disturbance area.	Similar impacts as Traffic Signals at Arterials and Major Development Alternative.	Similar impacts as Roundabouts at Arterials Alternative; however, slightly greater loss and disturbance of potential habitat in riparian areas because of increased disturbance area near Hogan's Slough.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Aquatic Species						
Montana Species of Special Concern	No impact.					
Aquatic Species	No impact.	Minor potential impacts to aquatic species in Hogan's Slough and Canyon Creek from loss of riparian vegetation and increased storm water runoff (contaminants and increased water temperature).		Similar impacts as Traffic Signals at Arterials Alternative; however, slightly greater loss and disturbance of potential habitat in riparian areas because of increased disturbance area.		Similar impacts as Traffic Signals or Roundabouts at Arterials Alternatives; however, there would be a slightly greater loss and disturbance of potential habitat in riparian areas because of increased disturbance area near Hogan's Slough.

**Table S.1 Summary of Estimated Potential Impacts of Alternatives (cont.)**

Topic Area	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative	Preferred Alternative
Air Quality						
Carbon Monoxide	Increase in vehicle emissions including carbon monoxide at major intersections due to decreased LOS and increased congestion.	Decrease in vehicle emissions including carbon monoxide at major intersections due to improved LOS and decreased congestion would improve air quality at these intersections.  Conforms to <i>Billings Urban Area 2005 Transportation Plan</i> ; therefore, complies with Clean Air Act.	Similar impacts to Traffic Signals at Arterials Alternative; however, slightly greater potential to improve air quality because LOS would be better at major intersections, resulting in slightly lower vehicle emissions including carbon monoxide.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.	
Section 4(f) Properties						
Section 4(f) Property Impacts	No impact.	BBWA Canal and Snow Ditch: Section 4(f) use of these sites. Bunkhouse and Big Ditch Canal: No Section 4(f) use of these sites.				
Construction Impacts						
Impacts During Construction	No impact.	Temporary increased noise, mobile source air emissions, fugitive dust (dust in air), energy consumption, soil erosion, sedimentation; use of construction easements and staging areas; traffic delays; traffic congestion; potential for hazardous material spills; visual intrusions; and displacement of wildlife, migratory birds, and aquatic species.  Disruption of pedestrian and bicycle access, residential and business accesses, parking, emergency response, irrigation systems, and utility connections.  Short-term creation of direct and indirect jobs associated with construction.				



Mitigation measures to avoid, minimize or reduce adverse social, economic, and environmental impacts were prepared for the Preferred Alternative and are summarized in Table S.2.

**Table S.2 Mitigation Measures for Preferred Alternative**

Resource Area	Type of Impact	Mitigation
<b>Access</b>		
Shiloh Road Access	Removal or relocation of property access to Shiloh Road.  Out-of-direction travel due to installation of median and restricted turn movements.	Access closures and relocations will be coordinated with affected property owners during final design to minimize impacts to residences as well as agricultural and business operations.  Additional median breaks and provisions for left-in turns will be assessed during final design to reduce out-of-direction travel resulting from the implementation of medians.
<b>Safety</b>		
Intersections	Potential initial driver confusion regarding modern roundabouts.	MDT will incorporate a public information program describing roundabouts and their operations that would include a Web site providing information to help the public understand how to maneuver through these circular flowing intersections. The site provides basic information regarding roundabouts, including why MDT wants to utilize roundabouts and how pedestrians, bicyclists, and motorists can safely maneuver through them. MDT's public information program may also include informational brochures to be placed at the Airport, Chamber of Commerce and Visitor's Center, local businesses, and area hotels. These measures will help to improve drivers' understanding of modern roundabouts.
<b>Pedestrians and Bicycles</b>		
Intersections	Potential initial confusion regarding modern roundabouts.	See Safety.

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Community Resources</b>		
Property and Structures	Impacts to church and park property.	Where appropriate, MDT will minimize or avoid impacts through final design modifications including, but not limited to, reconfiguring accesses, steepening side slopes, reducing boulevard widths, or constructing retaining walls; or minimizing ROW acquisition.  Acquisition of land, and improvements, for highway construction is governed by state and federal laws and regulations that are designed to protect both the landowners and the taxpaying public. Landowners affected are entitled to receive just compensation for any land or improvements acquired and for any depreciation in value of the remaining land due to the effects of highway construction pursuant to Montana law. Acquisition will be accomplished in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."
<b>Local and Regional Economics</b>		
Property and Structures	Physical impacts to commercial property and structures.	See Right-of-Way and Relocations for mitigation of impacts to property and structures.
<b>Right-of-Way and Relocations</b>		
Right-of-Way	ROW requirements.	Where appropriate, MDT will minimize or avoid impacts through final design modifications including, but not limited to, reconfiguring accesses, steepening side slopes, reducing boulevard widths, or constructing retaining walls; or minimizing ROW acquisition.
Property Acquisition	ROW acquisition and relocations/acquisitions of residences and commercial businesses	Acquisition of land, and improvements, for highway construction is governed by state and federal laws and regulations that are designed to protect both the landowners and the taxpaying public. Landowners affected are entitled to receive just compensation for any land or improvements acquired and for any depreciation in value of the remaining land due to the effects of highway construction pursuant to Montana law. Acquisition will be accomplished in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Utilities</b>		
Relocations	Relocation of utilities.	In accordance with MDT Standard Specifications, utility companies will be contacted to coordinate activities to avoid or minimize disruption to service. According to Montana statute, as applicable, MDT will pay a portion of any required utility relocations.
<b>Cultural/Archaeological/Historical Resources</b>		
BBWA Canal	Potential impacts to canal from construction of new multi-use path over canal.	To minimize impacts: <ul style="list-style-type: none"> <li>No piers for the new multi-use path bridge will be located in the BBWA Canal.</li> <li>On the Shiloh Road bridge and corresponding approaches, as appropriate, reduce the boulevard width separating the sidewalk from the roadway to approximately 0.6 m (2 ft).</li> </ul>
Bunkhouse	Potential impacts to site from construction of roundabout and sidewalk.	To avoid the site: <ul style="list-style-type: none"> <li>Construct an approximately 0.15-m (0.5-ft) wide retaining wall between the back of sidewalk and southwest corner of site.</li> <li>Eliminate the boulevard width (1.5 m [5 ft]) that is proposed to separate the sidewalk and the roadway.</li> <li>Narrow the sidewalk to meet the minimum ADA requirement of 0.9 m (3 ft) at the southwest corner of the Bunkhouse site (the sidewalk will resume the proposed 2.1 m [7 ft] width on both sides of this section where it is adjacent to the curb).</li> <li>Shift the roundabout to the west approximately 2.5 m (8.2 ft) and south approximately 4.6 m (15.1 ft).</li> <li>Reduce the ROW requirement from 3 m (10 ft) beyond the construction limits to approximately 0.3 m (1 ft) beyond the outside edge of sidewalk and near the edge of the retaining wall at the southwest corner of the Bunkhouse site.</li> </ul>
Snow Ditch	Potential impacts from replacing existing culvert, installation of new culvert, and placement of guardrail.	To minimize impacts: <ul style="list-style-type: none"> <li>Replace the standard 6-to-1 (horizontal to vertical) side slope with a steeper side slope where the ditch is not in culvert in order to keep the ditch open and minimize impacts related to grading. This will require the steepening of side slopes for approximately 275 m (902 ft). The installation of guardrail may be required as a safety measure along sections with steepened slopes.</li> </ul>

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Noise</b>		
Receptors	19 to 27 Category B receptors would meet or exceed MDT noise impact criteria.	No feasible or reasonable noise mitigation was identified for existing receptors. To minimize traffic noise impacts at planned or proposed developments within the project area, noise-compatible land uses and/or noise mitigation measures will need to be incorporated into the future development. MDT will provide the Revision 1 Shiloh Road Corridor Study, Traffic Noise Study to the City and County Planning Department for their consideration in land use planning and reviewing development proposals.
<b>Contaminated Sites / Hazardous Materials</b>		
Hogan's Slough Bridge	Removal of treated timber bridge.	Hogan's Slough bridge materials will be salvaged or disposed of in accordance with applicable laws and regulations.
Underground Storage Tanks and Solid Waste and Soil Contamination	Potential impacts to underground storage tanks at one gas station and potential removal of fill originally excavated for the Shiloh Drain and relocation of structures and/or excavation in proximity to current or former residences and farmsteads.	In accordance with MDT Standard Specifications, if contaminated soils or hazardous materials are encountered, excavation and disposal will be handled in compliance with applicable federal, state, and local regulations.
Asbestos	Potential asbestos present in three potentially impacted structures.	Structures identified for relocation or demolition will be inspected for asbestos. If regulated asbestos containing material is found, the materials will be removed according to state and federal regulations.
<b>Irrigation</b>		
Irrigation Systems	Relocation of impacted canals and ditches.	Canals and ditches will be relocated as necessary in consultation with owners to minimize impacts. As appropriate, removal of ditches will be done during construction of new roadway and will include removal of concrete headgates, pipes, and structures. New facilities will be located outside proposed project ROW.
BBWA Canal	Construction of new multi-use path over BBWA Canal.	For canal maintenance purposes, canal will be lined with concrete underneath the proposed bridge for the multi-use path and approximately 3 m (10 ft) upstream and downstream of the bridge. (See Cultural/Archaeological/Historic Resources for additional mitigation).
Snow Ditch	Replacement of culvert and installation of new culvert.	See Cultural/Archaeological/Historic Resources for mitigation.

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Water Resources/Quality</b>		
Storm Water Runoff	Roadway surface water runoff collection.	The Preferred Alternative has been designed to minimize water quality impacts and will be in compliance with applicable permits and authorizations including Clean Water Act (CWA) Section 404, Montana Stream Protection Act (SPA 124), and the General Permits for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System (MS4).  A paved shoulder section will be considered during final design instead of curb and gutter south of the BBWA Bridge (approximately 85 m [280 ft] south of the Hesper Road intersection) to eliminate the need for a storm water collection system for that segment of the corridor. These mitigation measures will not be applicable between Hesper Road and the BBWA Bridge due to the roundabout design.
Groundwater Wells	Potential impacts to groundwater wells if discovered during final design or construction.	Relocation of impacted wells in accordance with FHWA's and MDT's standard procedures.
<b>Water Body Modifications</b>		
Water Bodies	Alteration of water bodies from construction of new bridges and culverts.	Structures will be designed to minimize disruption of hydrology or permanent alterations of banks and in compliance with applicable permits and authorizations including CWA Section 404 and SPA 124.  Clearing of riparian areas will be done in accordance with mitigation measures described in Vegetation. Specific mitigation measures for the BBWA Canal and Snow Ditch are described in Cultural/Archaeological/Historic Resources.

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Wetlands</b>		
Wetlands	Filling of wetlands and hydrologic modifications.	<p>MDT's standard practice in regard to jurisdictional wetland impacts is to:</p> <ol style="list-style-type: none"> <li>1. Avoid potential adverse impacts to the maximum extent practicable.</li> <li>2. Minimize unavoidable adverse impacts to the extent appropriate and practicable.</li> <li>3. Compensate for unavoidable adverse impacts that remain after all appropriate and practicable minimization has occurred.</li> </ol> <p>Estimated wetland impacts included in this EA are based on conceptual design and are subject to COE review. Adverse wetland impacts have been avoided and minimized as much as practicable and as much as can be determined in the conceptual design phase. Avoidance and minimization measures to date include designing reconstruction of Shiloh Road to generally include widening of the road using the existing centerline, holding the grade as low as practicable, and steepening fill slopes where practicable and where safety would not be compromised.</p> <p>Avoidance and minimization measures will continue to be employed where practicable throughout design and construction. Mitigation for unavoidable adverse impacts to jurisdictional wetlands will be coordinated with the COE and other resource agencies as required for permitting. If offsite mitigation is required, wetland impacts will likely be mitigated at an established MDT Wetland Reserve in Watershed #13 (Upper Yellowstone). Those reserves currently include the Stillwater River and Wagner Pit Sites. Additional sites are currently being developed.</p>
<b>Vegetation</b>		
Vegetation	<p>Small loss of riparian vegetation from replacement of bridges and culverts and reconstruction of roadway.</p> <p>Removal of mature trees.</p>	<p>In accordance with MDT Standard Specifications, clearing and grubbing will be limited to the area necessary for construction of the project.</p> <p>As a result of ROW negotiations and agreements with individual property owners, trees may be replaced.</p> <p>Mitigation for noxious weeds is described in Construction Impacts.</p>

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Wildlife and Migratory Birds</b>		
Migratory Birds	Potential impact to migratory birds from removal of bridge potentially used for nesting.	Mitigation measures described under the Water Resources/Quality section will minimize impacts to wildlife and migratory bird habitat.  The Hogan's Slough Bridge will be rechecked for nesting activity closer to the start of construction. If the bridge is to be removed during the migratory bird nesting period, inactive nests will be removed prior to the nesting period and efforts will be undertaken to ensure that new nests are not established prior to removal of the old structure. If active nests are reestablished or exist on the structure, on or between May 1 and August 15 (the nesting period), the structure or nests will not be removed until the MDT project manager, in coordination with MDT Environmental Services, provides approval.
<b>Aquatic Species</b>		
Fisheries	Potential impacts to fish passage at Hogan's Slough.	The structure at Hogan's Slough will be designed for fish passage. The proper placement of the structure will be determined by means of engineering analysis to address the required hydraulic functions.
<b>Section 4(f) Properties</b>		
Refer to Appendix D for Programmatic Section 4(f) Evaluations and mitigation for the BBWA Canal and Snow Ditch.		
<b>Construction Impacts</b>		
Traffic	Disruption of traffic during roadway construction.	A construction traffic control plan will be developed according to MDT Standard Specifications to include construction phasing devised to maintain two lanes of traffic and uninterrupted side road access along the corridor to the greatest extent practicable. The contractor will coordinate with emergency service providers and schools to solicit input for the construction traffic control plan and to provide ongoing information during construction.
Access	Temporary access impacts.	Early notification and coordination with affected adjacent property owners.
Pedestrians and Bicycles	Disruption of pedestrian and bicycle movements.	Mitigation for construction impacts will include maintenance of walkways and pavement to the extent practicable and providing additional pedestrian signage during construction. The construction traffic control plan will include providing protection, safety, and convenience for pedestrians and bicyclists.

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Construction Impacts (cont.)</b>		
Community Resources	Emergency service and school bus routes could be impacted by lane closures and traffic congestion during construction.	Coordination with emergency services and school districts will be undertaken prior to construction and will be included as part of the construction traffic control plan.
Local and Regional Economics	Temporary access and construction areas are needed.	Early notification of affected property owners regarding construction activities. During construction, travel delays will be minimized to the extent practicable.
Right-of-Way and Relocations	Construction easements would be needed from property owners along the corridor. While the property owners would retain ownership of these areas, their use of these areas during construction would be restricted by particular construction activities. Upon completion of the roadway project, the property owners would have unrestricted use of these areas again.	Early notification of affected property owners, on a property-by-property basis, of construction activities in order to address potential construction impacts. Easements will be obtained in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."
Cultural/ Archaeological/ Historical Resources	Ground disturbing activities may unexpectedly uncover cultural materials.	In accordance with MDT Standard Specifications, if cultural material is unexpectedly encountered during ground-disturbing activities in the corridor, construction will cease immediately, and a qualified archeologist will be consulted to evaluate the significance of the cultural artifacts.
Noise	Construction activities would result in temporary increases in noise levels.	To minimize construction noise impacts on the local residents, contractors are required to adhere to local ordinances and BMPs to minimize noise impacts during construction. Contractors will be required to acquire a permit from the City to perform work during night-time hours. Permit conditions limit certain activities during these hours to minimize noise impacts. Advance notice of construction will be provided to area businesses and residences to minimize impacts on community activities.
Contaminated Sites / Hazardous Materials	Potential disturbance of contaminated soils within MDT ROW and easements.	If contaminated soils/sites are disturbed during construction, they will be addressed in accordance with MDT Standard Specifications and applicable federal regulations.
Irrigation	Irrigation facilities may be temporarily impacted.	Early coordination with affected irrigation ditch companies and owners to address potential impacts to irrigation activities during roadway reconstruction and irrigation ditch relocations. Reasonable measures will be taken to avoid disruption of irrigation activities during construction, such as scheduling interruptions to a facility when it is not being used (typically mid-October through mid-May).



**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Construction Impacts (cont.)</b>		
Visual Resources	Temporary impacts related to removal of vegetation and dust emissions.	Mitigation measures identified for Vegetation and Air Quality will reduce the visual impacts from construction.
Water Resources / Quality	Short-term impacts from increased storm water runoff, erosion, construction staging activities, spilled fuels, or other hazardous materials.	<p>An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / Montana Pollutant Discharge Elimination System (MPDES) regulations.</p> <p>The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control.</p> <p>To reduce the spread and establishment of noxious weeds and re-establish permanent vegetation, disturbed areas within MDT ROW or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting.</p>
Water Body Modifications	Temporary disturbance of water bodies during bridge and culvert removal or construction.	<p>An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / MPDES regulations.</p> <p>The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control.</p>
Wetlands	Temporary physical disturbance to wetlands during construction from bridge and culvert replacement and roadway construction activities; disturbance could include sedimentation, erosion, increase in non-native plant species, and introduction of pollutants into wetlands.	<p>An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / MPDES regulations.</p> <p>The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control. To reduce the spread and establishment of noxious weeds and re-establish permanent vegetation, disturbed areas within MDT ROW or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting.</p>

**Table S.2 Mitigation Measures for Preferred Alternative (cont.)**

Resource Area	Type of Impact	Mitigation
<b>Construction Impacts (cont.)</b>		
Vegetation	The spread and establishment of noxious weeds during construction.	To reduce the spread and establishment of noxious weeds and to re-establish permanent vegetation, disturbed areas within MDT ROW and easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting. An erosion control and sediment control plan will be prepared in compliance with Section 402/MPDES regulations.
Wildlife and Migratory Birds	Potential impacts to wildlife and migratory birds from water quality degradation from work in and near water bodies in the area.	Mitigation measures described under the Water Resources/Quality section will minimize impacts to wildlife and migratory bird habitat.
Aquatic Species	Short-term impacts to aquatic species due to in-stream work.	Mitigation measures described under the Water Resources/Quality section will minimize impacts to aquatic species habitat.
Air Quality	Short-term increases in fugitive dust and mobile source emissions.	Fugitive dust and mobile source emissions will be minimized via adherence to MDT Standard Specifications, which will limit clearing and grubbing; specify re-seeding procedures; require use of water or chemical dust suppressant; require that contractors operate in compliance with air quality standards established by federal, state, and local agencies; and require the development of a construction traffic control plan, which will minimize disruption of traffic and associated engine idle time.

## **1.0 PURPOSE AND NEED**

### **1.1 PROJECT DESCRIPTION/BACKGROUND**

#### **1.1.1 Project Location**

The proposed project is located in Yellowstone County (County) on Shiloh Road near the western edge of the City of Billings (City), as shown on Figure 1.1. Since January 2003, Shiloh Road is located entirely within the Montana Department of Transportation (MDT) urban boundary (see Figure 1.1). The urban boundary is established through a cooperative process involving MDT and local officials with final approval by the Montana Transportation Commission and the United States Department of Transportation Federal Highway Administration (FHWA).

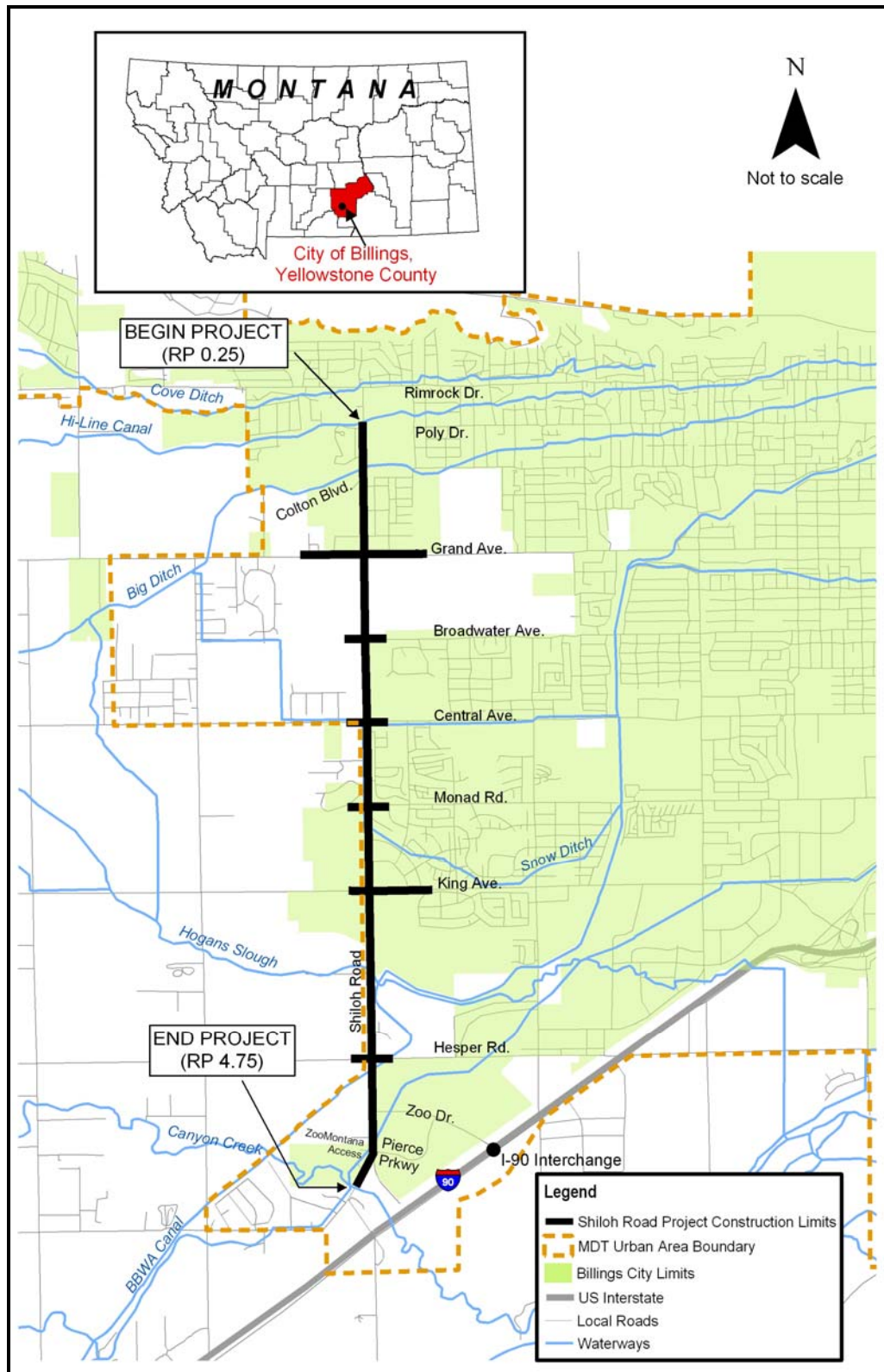
The southern project limit is at Canyon Creek Bridge (Reference Post [RP] 4.75) and the northern limit is at Poly Drive (RP 0.25). The limits, or project termini, were selected for the following reasons. The southern terminus was selected based on the projected traffic volumes in the corridor. South of Pierce Parkway, the projected traffic volumes on Shiloh Road drop substantially and improvements are not needed. The terminus at the north end of the Canyon Creek Bridge allows for an area south of Pierce Parkway for the transition to existing conditions. The northern terminus corresponds with the southern limit of a City project to reconstruct Shiloh Road between Poly Drive and Rimrock Road as a four lane facility with raised center median. This City project, referred to as Special Improvement District (SID) 1371, was completed in October 2005.

Topography in the project area is relatively flat with the elevation gradually ranging from approximately 1,018 meters (m) (3,340 feet [ft]) near Poly Drive to 981 m (3,220 ft) near Canyon Creek Bridge. The portion of the project corridor south of King Avenue is dominated by agriculture and industrial land uses and also includes some residential and commercial sites as well as ZooMontana. The portion of the project corridor north of King Avenue transitions from predominantly agriculture to residential and commercial land uses. There are also several churches located throughout the project corridor. The West Billings area, where the project corridor is located, is the fastest growing portion of the Billings Metropolitan area and is transitioning from rural to urban.

Within the proposed project limits, Shiloh Road has seven major cross-streets including Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue. The corridor also crosses one major waterway (Hogan's Slough) and four irrigation supply ditches (Canyon Creek Ditch, Billings Bench Water Association [BBWA] Canal, Snow Ditch, and Big Ditch).

In this report, the project corridor refers primarily to the area extending 150 m (492 ft) on either side of the existing centerline of Shiloh Road for the length of the project. The project corridor also extends to 200 m (656 ft) east and west at each of the seven major intersections except Grand Avenue and King Avenue where the project corridor extends to 600 m (1,968 ft). The project area is defined as to the area adjacent to the existing roadway that potentially would be directly affected by construction-related (i.e., ground disturbing) activities. The project vicinity refers to a larger area that encompasses an approximate 1.6-kilometer (km) (+/- 1-mile [mi]) radius from the existing centerline of Shiloh Road that could be indirectly affected by the proposed project.

Figure 1.1 Project Location



### 1.1.2 Project Description

Shiloh Road is a two-lane, City-classified principal arterial (pending approval of the Montana Transportation Commission and the FHWA), which was constructed in 1956. The current roadway has 3.6-m (12-ft) lanes with shoulders of varied width (0 – 2.4 m [0 – 8 ft]). This north-south corridor connects West Billings to the Shiloh Road Interchange on I-90 and has been identified as the western gateway to the City of Billings in the *West Billings Plan* (City of Billings, 2001). On Shiloh Road, traffic signals with auxiliary turn lanes exist at King Avenue and Grand Avenue intersections. Additionally, right- and left-turn lanes (with no traffic signal) exist at the entrance to ZooMontana as well as Zoo Drive and Broadwater Avenue intersections. No traffic signals or turn lanes currently exist at Hesper Road or Monad Road. Central Avenue intersection was signalized without turn lanes in August 2006. This traffic signal at Central Avenue is intended to serve as an interim measure until the final alternative is selected from this environmental process.

There is currently limited transit service on or near Shiloh Road because only portions of the road are within the Billings City limits. Two City of Billings Metropolitan Transit (MET) routes extend to Shiloh Road from the east.

The corridor currently has one segment of sidewalk along the west side of Shiloh Road and three on the east side. A multi-use path called the Big Ditch Trail crosses Shiloh Road via an underpass north of Colton Boulevard. Additionally, a sidewalk and multi-use path were recently implemented on Shiloh Road north of the project limits as part of a City project that extended from Poly Drive to Rimrock Road.

Along the majority of the route, Shiloh Road does not meet current MDT design standards and is characterized by inadequate vehicle turning radii at intersections, narrow or non-existent shoulders, inadequate clear zones, and deteriorating roadway. MDT proposes to reconstruct the approximately 7.27-km (4.52-mi) section of Shiloh Road between Canyon Creek Bridge and Poly Drive (refer to Figure 1.1). Proposed improvements would generally include adding travel lanes, providing or widening shoulders, storm drainage improvements, improving intersections and clear zones throughout the corridor as well as adding sidewalks, lighting (such as street lighting, lighting for raised medians, and possibly lighting for the multi-use path), and a multi-use path where appropriate in the corridor. Improvements would address the primary needs to improve mobility and safety.

The Shiloh Road Corridor project is currently in the project development phase which includes an environmental assessment (EA). The EA documents the evaluation of alternatives to address capacity, safety, and roadway and intersection deficiencies along the Shiloh Road corridor through the design year of 2027.

Upon completion of this EA, if no significant impacts are identified, then a Finding of No Significant Impact (FONSI) would be issued by FHWA. If it is determined that there are significant impacts under the build alternatives, either the No Build Alternative would be selected or an environmental impact statement (EIS) would need to be completed. The results of this analysis will determine if the project will proceed to the next phases, which would include final design of the selected alternative, right-of-way (ROW) acquisition, and construction.

### 1.1.3 Project History

MDT performed traffic counts in 1998, which indicated that traffic volumes on Shiloh Road were exceeding the capacity. In 2000, Yellowstone County and the City of Billings recommended widening Shiloh Road to a five-lane principal arterial from I-90 to Rimrock Road in the *Billings Urban Area*

*2000 Transportation Plan.* Based on the traffic projections, growth projections, and travel patterns in the Billings metropolitan area that were documented in the 2000 Transportation Plan, the Shiloh Road corridor was ranked #2 on the Billings Metropolitan Planning Organization (MPO) transportation improvement priority list. The current Billings Transportation Plan, *Billings Urban Area 2005 Transportation Plan*, also supports this recommendation. Also in 2000, Shiloh Road via Zoo Drive became a primary access to I-90 for the West Billings area when the Shiloh Road Interchange was completed. In April of 2001, MDT conducted a field review of Shiloh Road to assess existing conditions in the corridor and develop a proposal for the future improvements in the corridor. The *West Billings Plan* documented the community's desire to establish the Shiloh Road corridor as a community entryway.

In the summer of 2002, the EA for the proposed corridor improvements was initiated. At that time, the project limits extended from Canyon Creek Bridge to Grand Avenue. North of Grand Avenue, the City of Billings initiated efforts for improvements between Grand Avenue and Rimrock Road and considered a SID to fund this project. In April 2004, the proposed project (SID 1361) was withdrawn by the City. As the northern terminus of MDT's Shiloh Road Corridor project was the southern limit of the proposed City project, MDT coordinated with the City to discuss how improvements to this portion of Shiloh Road could be implemented. On August 11, 2004, the Montana Transportation Commission approved the approximately 1.2 km (0.75 mi) extension of this project to include the segment of Shiloh Road from Grand Avenue north to Poly Drive. The segment from Poly Drive to Rimrock Road was completed by the City under SID 1371 in October 2005.

#### **1.1.4 Project Funding and Schedule**

The MPO has prioritized federal and state funds provided through the Surface Transportation Program Urban (STPU) funding program for this project. STPU funds available to Billings in 2008 are estimated to be about \$10 million. Additionally, in the summer of 2005, Congress passed a \$286 billion dollar transportation bill called SAFETEA-LU (Safe, Accountable, Flexible & Efficient Transportation Equity Act - a Legacy for Users), which was signed into law by the President on August 10, 2005. This bill authorized \$10 million toward the funding for the Shiloh Road Corridor project, which would cover a portion of the approximately \$30 million required for analysis, engineering, and construction of the preferred alternative. The involvement of federal funds establishes FHWA as the oversight agency. As such, FHWA in conjunction with MDT will review the alternatives evaluation in the EA and consider public and agency input prior to selecting the preferred alternative for implementation. MDT estimates that construction of the proposed Shiloh Road Corridor project would start by the end of 2009 and would take one or two construction seasons to complete.

### **1.2 PURPOSE OF PROJECT**

The purpose of the proposed project is to improve the mobility and safety in the Shiloh Road corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements.

### **1.3 NEED FOR PROJECT**

The proposed project is needed to improve safety by addressing specific safety issues and roadway and intersection deficiencies in the corridor. In addition, the proposed project is needed to address mobility issues related to roadway capacity, transportation system linkages, and alternative modes of transportation. These safety and mobility issues are described below.

### 1.3.1 Need to Improve Safety

Safety improvements are needed for the Shiloh Road corridor. In 1994, MDT implemented safety improvements at the intersection of Hesper Road and Shiloh Road which included flashers, signs, and pavement markings. In 1997, MDT implemented similar improvements at the intersections with Broadwater Avenue and King Avenue. In 1997, the intersection with Central Avenue was identified as a crash cluster location, but no feasible countermeasures to address specific crash trends were identified.

MDT collected crash data on the Shiloh Road corridor for the five-year period between January 1996 and December 2000. There were 88 recorded crashes on Shiloh Road within the project limits during this time period. The majority of these crashes were two or three vehicle collisions at one of the major intersections. Concentrations of crashes occurred at the intersections with Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue.

Subsequently, crash statistics for the corridor were also collected for a three-year period between January 1, 2001 and December 31, 2003. A total of 112 crashes were reported during the three-year period, 60 of which were injury crashes. Most crashes were at major intersections and involved rear-end and right-angle collisions. Although 22 crashes were reported as non-intersection related, many of those occurred in proximity to intersections as motorists approached various intersections in the Shiloh Road corridor. See Tables 3.9 – 3.11 for more detailed information.

### 1.3.2 Need to Improve Roadway and Intersection Deficiencies

The Shiloh Road corridor has both roadway and intersection deficiencies, which are explained in this section. Roadway deficiencies in the Shiloh Road project corridor include deteriorating roadway, narrow and non-existent shoulders, inadequate clear zones, and substandard guardrail. Intersection deficiencies include lack of auxiliary turn lanes and inadequate turning radii.

#### Roadway Deficiencies

The existing street surface on Shiloh Road, which was originally constructed in 1956, is in poor condition with longitudinal and transverse cracking, potholing, and heaving. Road surface rutting has occurred on aged sections of roadway. The road surface is subject to frequent truck traffic, due largely to heavy construction activity occurring in western Billings and the presence of a gravel mining and asphalt and concrete production plant located just west of Shiloh Road between Hesper Road and King Avenue.

FHWA's current functional classification of Shiloh Road is an urban minor arterial, and is pending Montana Transportation Commission and FHWA approval to reclassify as an urban principal arterial. In the *Billings Urban Area 2005 Transportation Plan* the City identifies Shiloh Road also as a principal arterial. MDT's design standards for urban principal arterials with the existing level of traffic on Shiloh Road include two 3.6-m (12-ft) travel lanes with 1.8-m (6-ft) shoulders for a total paved width of 10.8 m (36 ft) when curb and gutter is not present. The current roadway generally has 3.6-m (12-ft) travel lanes, which adheres to MDT standards, but the shoulders vary in width (0 – 2.4 m [0 – 8 ft]). Approximately 70 percent of the shoulders in the project corridor are substandard in width.

In addition to deteriorating roadway and narrow shoulders, Shiloh Road has inadequate clear zone. Clear zone is the area adjacent to the roadway that provides recovery area for errant vehicles. The clear zone guideline for a two-lane urban road with the traffic volumes existing on Shiloh Road is 6 m (19.7 ft) for a 70 km/h (45 mph) design speed and 6.5 m (21.3 ft) for a 90 km/h (55 mph) design speed with a 6:1 or flatter fill slope (MDT Road Design Manual). A 6:1 fill slope means that the slope of the

clear zone adjacent to the road would only drop one meter for every six meters it extended out from the road. The existing clear zone within the project area generally does not meet the guidelines from American Association of State Highway and Transportation Officials (AASHTO) 2002 Roadside Design Guide. This is a result of obstacles in the clear zone, mainly power poles, and substandard cut and fill slopes. These can be potentially hazardous for errant vehicles veering into the clear zone area because it is difficult for the vehicle to recover and/or avoid the obstacles.

Finally, the bridge at Hogan's Slough is in need of guardrail upgrades. The ends of the guardrail on the bridge, called "terminal end sections," and the longitudinal rails do not meet current MDT standards (Figure 1.2). Terminal end sections can present a potential obstacle for errant vehicles and thus are designed to diminish the impact on these vehicles. Terminal end systems are continually being improved in response to an increased understanding of safety performance, a changing vehicular fleet, the emergence of new materials, and other factors. The longitudinal rails must meet National Cooperative Highway Research Program (NCHRP) 350, Test Level 3 accident standards.

**Figure 1.2 Guardrail on Hogan's Slough Bridge**



### Intersection Deficiencies

Intersection deficiencies also exist at some of the major intersections along Shiloh Road within the project corridor. The majority of the recorded crashes between January 2001 and December 2003 were at the major intersections. There are no auxiliary turn lanes on the approaches to intersections at Hesper Road, Monad Road, or Central Avenue, which can be a contributing factor in the rear-end crashes at these locations as identified in Table 3.9.

Another issue present at most intersections on Shiloh Road is substandard turning radii. MDT standards require intersections to accommodate a WB-20LM vehicle (a tractor and single trailer combination, total distance from the center of the front axle to the center of the rear-most axle of the trailer is approximately 20 m [66 ft]). The turning radii at intersections along Shiloh Road are generally less than that standard. As a result, some trucks may be forced to encroach into opposing travel lanes or turn pockets to negotiate turns at intersections. If another vehicle is present at the intersection, the truck will either have to wait for the vehicle to clear or allow the trailer to off-track the roadway onto the dirt or hop the curb.



### 1.3.3 Need to Improve Capacity

The Shiloh Road corridor is currently nearing or exceeding capacity during peak traffic conditions at some intersections, and operational efficiency will decline as traffic volumes in the corridor increase (Figure 1.3).

**Figure 1.3 Peak Hour Traffic on Shiloh Road near Broadwater Avenue Looking North**



According to the *Billings Urban Area 2005 Transportation Plan*, growth in the area surrounding the project corridor has been on the rise since 1970 and is projected to continue. Between 1970 and 1990, the two neighborhoods bordering Shiloh Road on the east (Billings NW and the West End) comprised 35 percent of the growth in Billings (see Figure 3.2 in Section 3.3.1 for map of neighborhoods in Billings). Population forecasts for the period of 2002 to 2027 indicate that growth will shift farther west to the neighborhoods bordering Shiloh Road on the west (Shiloh West and Shiloh Northwest). These two neighborhoods are expected to experience population increases of 84 percent and 354 percent, and employment is expected to increase 277 and 378 percent respectively between 2002 and 2027.

As growth and development in the City of Billings continue to shift outward from the city center, transportation corridors near the urban fringe have experienced steadily increasing traffic volumes. Traffic volumes along the project corridor increased after the completion of the Shiloh Road Interchange in 2000, because Shiloh Road via Zoo Drive provided direct access to I-90 for residents and businesses in the west and northwest area of Billings. As shown in Table 1.1, average annual daily traffic (AADT) volumes on Shiloh Road are expected to continue to increase over the next twenty years as urban fringe development continues.

Numerous developments have recently been proposed along Shiloh Road within the project corridor (see Figure 1.4). This proposed development in the Shiloh Road corridor exceeds what was assumed in the *Billings Urban Area 2005 Transportation Plan*. As shown in Table 1.1, the traffic volumes in the corridor as a result of anticipated growth are projected to increase between 26 and 54 percent between 2002 and 2027 depending on the location in the corridor. These traffic volumes are beyond the current capacity of the Shiloh Road facility.

**Table 1.1 Traffic Projections in the Shiloh Road Project Corridor**

Road Segment	2002 AADT	2027 AADT
Canyon Creek Bridge – Zoo Drive	4,020	7,500
Zoo Drive – Hesper Road	11,420	31,300
Hesper Road – JTL/County Access	9,010	33,400
JTL/County Access – Montana Sapphire Drive	9,010	33,600
Montana Sapphire Drive – King Avenue	9,010	34,900
King Avenue – Monad Road	9,185	34,300
Monad Road – Central Avenue	10,375	38,100
Central Avenue – Howard Avenue	11,760	34,200
Howard Avenue – Broadwater Avenue	11,760	34,000
Broadwater Avenue – Yegen Property	11,640	32,000
Yegen Property – Grand Avenue	11,640	33,200
Grand Avenue – Poly Drive	9,670	23,900

Source: Engineering, Inc. Preliminary Traffic Report (July 2005), Engineering, Inc., October 2006 – personal communication

Traffic congestion experienced by drivers along a road facility is reported through level of service (LOS) measurement. LOS is a qualitative measure that ranges from LOS A, describing the highest quality of traffic service when motorists are able to travel at their desired speed, to LOS F, which represents heavily congested flow with traffic demand exceeding available capacity and highly variable speeds. A traffic analysis based on 2002 traffic counts indicated that the corridor was facing capacity issues, with all major intersections except for Grand Avenue operating at LOS C or worse during the peak traffic hour. Traffic projections for the Shiloh Road corridor indicate that the major intersections on Shiloh Road will operate at a LOS E or F during the evening peak hour by 2027 if no improvements are made (see Section 3.2.1).

Arterial streets such as Shiloh Road are intended to provide efficient connections between higher classification roadways (freeways) and lower classification roadways (collector streets). The *Billings Urban Area 2005 Transportation Plan* states that principal arterials should “favor mobility functions over land access functions” to “provide a high level of mobility.” Currently, much of the corridor is undeveloped and access control measures such as raised medians are only present from Grand Avenue to Avenue B. As discussed in Section 3.3.3, nearly every parcel adjacent to the corridor will be developed for residential or commercial use by the design year (2027). As such, access management and capacity improvements are critical to creating a facility that will function effectively as a principal arterial, thus improving the transportation system.

### 1.3.4 Need to Improve Transportation System Linkage

With the completion of the Shiloh Road Interchange, Shiloh Road serves as the primary north-south route in West Billings and provides a main access between West Billings and I-90. This corridor is also important for regional mobility and provides a connection between I-90 and Highway 3 via Zimmerman Trail. The *Billings Urban Area 2005 Transportation Plan* identifies Shiloh Road as a principal arterial and identifies this project as addressing both regional and community mobility.

**Legend**

- Water Features
- City Limits
- Proposed Development**
  - Under Development
  - Proposed - Platted
  - Future - Not Platted

**Map Labels:**

- Streets:** Rimrock Rd, Poly Dr, Grand Ave, Broadwater Ave, Central Ave, Monad Rd, King Ave, Hesper Rd, Zoo Drive, Sabel Rd, Bell Ave, 48th St W, 32nd St W.
- Water Features:** Cove Ditch, Hi-Line Ditch, Snow Ditch, Arnold Drain, Hogans Slough, Canyon Creek, BBWA Canal, Canyon Creek Ditch.
- Project Limits:** Shiloh Rd, 48th St W, 32nd St W.
- Other Labels:** Yegen Property, Billings Clinic, Shiloh Estates Subdivision, Shiloh Chapel, MSU Billings, Shiloh Village Mobile Home Park, Village Subdivision, Olympic Park Subdivision, Kan's Super, Shiloh Crossing, Temple Estates, Regis Property, Long Lerner Property, Zoo Montana Access, Zoo Montana, Shiloh Business Park, William D. Pierce Subdivision, Trans Tech Center, Midland Empire Industrial and Commerce Center, JTL Gravel Pit and Asphalt Plant, Sharptail Park, Mahanah Sapphire Subdivision, Shiloh Creek, Circle Fifty Subdivision, Goodman Subdivision.

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### 1.3.5 Need to Accommodate Alternative Modes of Transportation

#### Transit

City of Billings Metropolitan Transit (MET) currently has three routes that provide bus service near Shiloh Road, but no bus service is currently provided on Shiloh Road. Because Shiloh Road is not entirely within the City of Billings, MET currently has no plans to provide additional bus service on the corridor or to provide bus service across the corridor. However, potential expansion of bus services on Shiloh Road needs to be considered in the proposed design to promote efficient future transportation system connections. Improving the capacity of Shiloh Road would improve traffic conditions, which in turn improves service reliability for transit if future routes include Shiloh Road.

#### Pedestrians/Bicycles

The Shiloh Road corridor currently has five formal pedestrian or bicycle facilities including four segments of sidewalk and a bicycle path (see Table 3.12). These facilities are discontinuous and do not provide adequate pedestrian/bicycle access to and along the corridor. In addition to limited pedestrian or bicycle facilities, the remainder of the corridor is not very accessible to pedestrians or bicyclists due to the narrow or non-existent shoulders that make pedestrian/bicycle travel difficult and potentially dangerous.

The *Heritage Trail Plan*, adopted by the City of Billings and Yellowstone County in 2004, identifies the Shiloh Road corridor for a north-south, off-street, multi-use path from Rimrock Road to the planned conservation corridor along Canyon Creek. The proposed off-street multi-use path along the west side of Shiloh Road would connect with five east-west off-street multi-use paths (one existing and four proposed), and could also be accessed via three primary bikeways, one secondary bikeway, and four arterial bikeways. Four of the five off-street multi-use paths would approach Shiloh Road from the east. Therefore, the *Heritage Trail Plan* recommended four grade-separated pedestrian crossings of Shiloh Road to provide seamless connectivity of these off-street multi-use paths. These pedestrian/bicycle crossings are located at Colton Boulevard (existing), and proposed at Howard Avenue, Monad Road, and Hogan's Slough.

## 2.0 ALTERNATIVES

This chapter presents the process for analyzing the preliminary alternatives and developing the final alternatives, including the Preferred Alternative. All build alternatives, including the Preferred Alternative, proposed for the Shiloh Road Corridor project provide for the reconstruction of Shiloh Road within the project corridor and achieve the project purpose and needs, as discussed in Section 1.0. Alternatives initially considered but eliminated from further analyses are discussed in Section 2.4.

### 2.1 DEVELOPMENT OF ALTERNATIVES

As discussed in Section 1.1.3, based on prioritization by the Billings MPO, MDT initiated this project in 2002 to address the needs to improve safety and mobility in the Shiloh Road corridor. During the course of three public meetings, ten Shiloh Road Corridor Project Advisory Committee meetings, and with input from corridor stakeholders, local officials, City and County staff, and agencies, alternatives as well as design treatments were identified. These alternatives were subjected to an initial level of screening by the project team to determine which alternatives to carry forward for additional analysis.

This initial screening was based on a “fatal flaw” analysis, which considered several factors: (1) whether the proposed alternative met the project “purpose and need” to improve safety and mobility in the Shiloh Road corridor, (2) whether the proposed alternative met the project design criteria, (3) whether a similar alternative would result in fewer environmental impacts, and (4) order of magnitude cost (reasonable or feasible). Costs were estimated according to average industry construction costs for the year 2009. Alternatives that did not adequately meet these screening criteria were eliminated from further consideration.

#### 2.1.1 Design Criteria

The design criteria for the project were developed by the project team in cooperation with the Project Advisory Committee. These criteria, which are outlined below, were intended to provide a basis for evaluating whether or not the alternatives met the project purpose and need and were consistent with MDT standards as well as local planning guidance.

#### Road Functionality

- Design facility to MDT Urban Design Standards, where practicable.
- Design facility to achieve a minimum of LOS C at all times for projected volumes in the design year.
- Design access to the facility utilizing guidelines specified for Intermediate (Canyon Creek to Grand Avenue) or Developed (Grand Avenue to Poly Drive) classification areas in the 1999 Access Management Project (Dye Management Group Inc., 1999).
- Consider intersections for signalization only if traffic signal warrants are met in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).
- Consider roundabouts at all intersections where signals are being evaluated (as per Montana Legislature House Joint Resolution 12) or if special safety or access concerns are identified.
- Accommodate multi-modal users in the corridor (trucks, cars, motorcycles, pedestrians, bicyclists, etc.).

## Hydraulics (Flooding and Drainage)

- Design the facility to ensure that it does not aggravate flooding risks associated with Hogan's Slough.

## Corridor Character

- The installation of landscaping and lighting features is to be considered in a manner consistent with whatever maintenance funds are available.

### ***Consider the goals and recommendations of the West Billings Plan where appropriate and practicable.***

- Design Shiloh Road as a Community Entryway Corridor.
- Incorporate landscaping into design of center medians.
- Incorporate grass, shrubs, and trees in roadside landscaping.
- Incorporate context sensitive design concepts.
- Design sidewalks with pedestrian safety and enjoyment in mind.
- Separate pedestrian walkways from vehicular traffic with landscaped areas.

### ***Consider the objectives of the Shiloh Corridor Overlay District where appropriate and practicable.***

- Promote a unique, attractive, and distinctive entryway corridor to the community.
- Minimize adverse impacts from the transportation system on adjoining lands.
- Minimize adverse aesthetic impacts associated with excessive lighting, signage, and other design features.

## 2.1.2 Access and Capacity Requirements

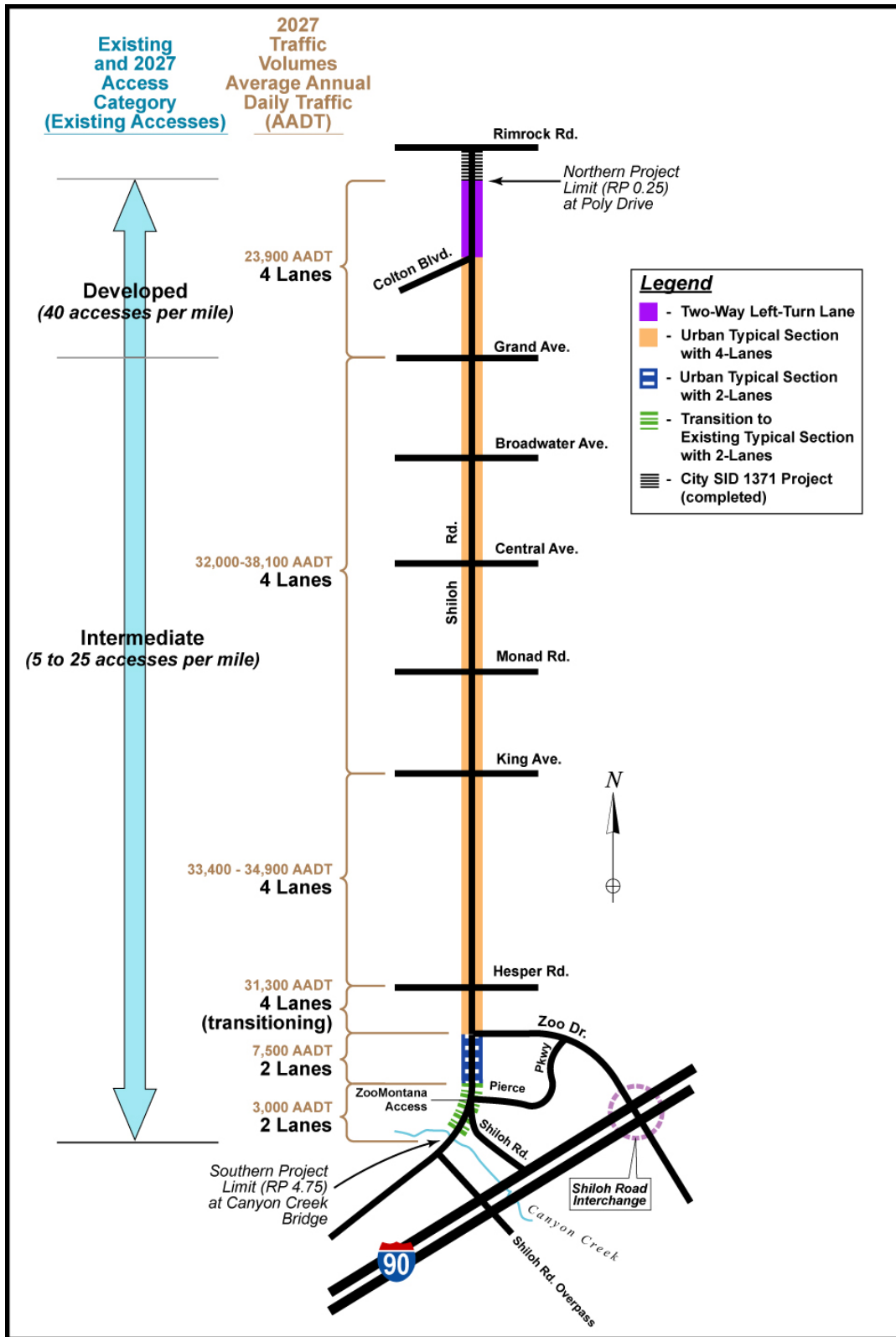
To improve safety in the corridor and to respond to future conditions, specific access and capacity requirements were identified for developing the Shiloh Road Corridor project alternatives. Variable access and capacity conditions in the corridor affected the design options that were considered at different locations in the corridor (see Figure 2.1).

### Access

Access management is the process of managing the points of access to roadway facilities. The purpose of access management is to maintain the flow of traffic and the functional integrity of the roadway, enhance public safety, preserve the public's investment in the highway, reduce future maintenance costs, and permit roadway expansion on existing locations. For the build alternatives, an access management plan would be developed for the Shiloh Road corridor, which includes Shiloh Road and those portions of streets crossing the corridor where ROW would be required.

As shown in Figure 2.1, the access requirements along Shiloh Road within the project limits are highly variable. As stated in Section 2.1.1, the access would be designed according to guidelines specified for Intermediate (5 – 25 accesses per mile) or Developed (more than 25 accesses per mile) classification areas in the Access Management Project (Dye Management Group Inc., 1999). Based on the Access Management Project guidelines, the section of Shiloh Road from Canyon Creek to Grand Avenue is

**Figure 2.1 Access and Capacity Requirements Along the Corridor**



Source: Source: Engineering, Inc., October 2006 – personal communication



best categorized as “Intermediate.” The portion of Shiloh Road north of Grand Avenue is best categorized as “Developed.” Table 2.1 below summarizes the Access Management Project report recommendations.

**Table 2.1 Recommended Access Guidelines**

Category	Cross Section	Area Classification	Signal Spacing <sup>1</sup>	Minimum Unsignalized Access Spacing
Primary	Divided	Intermediate	0.8 km (0.5 mi)	134 m (440 ft) for 45 mph, 167 m (550 ft) for 55 mph
Primary	Divided	Developed	0.4 km (0.25 mi)	46 m (150 ft)

Source: Access Management Project (Dye Management Group, Inc. 1999)

<sup>1</sup> This signal spacing would also be applied to the spacing of roundabouts.

Access management between Canyon Creek and Grand Avenue (Intermediate classification area) includes four design configurations for the median to control left turns onto and off of the corridor. As described in Section 2.2.3, these design configurations could include a raised median, a single channelized left-turn lane, opposing channelized left-turn lanes, and three-quarter access with a restricted left-turn onto Shiloh Road, as well as other configurations determined during final design. Access management between Grand Avenue and Poly Drive (Developed classification area) includes individual channelized left-turn lanes, opposing channelized left-turn lanes, or a two-way left-turn lane (TWLTL). These configurations are used to accommodate the high frequency of accesses along that portion of the corridor. Consideration for other design configurations, such as median breaks for u-turns and other median treatments, would be analyzed further in the design phase. In addition to implementing access management along Shiloh Road, those principles may also be applied to streets crossing Shiloh Road in the corridor. During final design, an Access Management Plan would be developed for this project that would specify the type and location of accesses in the corridor. That management plan would be developed in coordination with the City of Billings and Yellowstone County and would need to be approved by MDT in conjunction with an access control resolution approved by the Montana Transportation Commission.

For development of the alternatives for the EA, there were general principles of access management that were applied. These guiding principles are summarized below.

### ***Access Management Principles***

#### *Access Spacing*

Refer to Table 2.1 for recommended access spacing guidelines.

#### *Existing Accesses*

- Existing multiple accesses into a single parcel would be combined whenever reasonable.
- Adjacent property owners would be encouraged to share accesses.
- Existing non-standard accesses generally would be brought into compliance with current MDT access approach design standards.



- Existing accesses would be limited to right-in/right-out movements or restricted left-turns unless the location meets spacing requirements and the magnitude of use warrants a full-movement access.

#### New Accesses

- New accesses would only be allowed at the locations specified in the access management plan. The plan would be developed to incorporate the following:
  - a) To the extent practicable, new direct access to Shiloh Road would be limited to public roads or those roads that are platted or masterplanned prior to formal adoption of the access management plan.

### **Capacity**

The traffic volumes along Shiloh Road are substantially higher north of Zoo Drive than they are south of Zoo Drive (refer to Figure 2.1) because Zoo Drive provides a direct connection to I-90. As a result, the capacity improvements required for the design year (2027) are different for the segments of the project corridor north and south of Zoo Drive. Projected AADT north of Zoo Drive is between 23,900 and 38,100 vehicles per day. South of Zoo Drive, the volumes drop to between 3,000 and 7,500 vehicles per day. For this reason, four travel lanes are proposed north of Zoo Drive and two travel lanes are proposed south of Zoo Drive in all of the build alternatives.

## **2.2 ALTERNATIVES**

As a result of the alternatives development process described earlier, the alternatives were identified to be carried forward for detailed evaluation in the EA. These alternatives include the No Build Alternative and four build alternatives. The No Build Alternative is carried through the environmental consequences analysis in order to provide a comparison with the build alternatives. After evaluation of the alternatives, a Preferred Alternative was also identified and is described in this section. Alternatives that were considered but eliminated from further analysis are discussed in Section 2.4.

### **2.2.1 No Build Alternative**

Existing conditions in the project corridor would remain. There would be no improvements to the corridor other than ongoing regular maintenance and potential improvements implemented by other entities. There would be no access management plan developed for the Shiloh Road corridor. Any future access would be considered through the City and County platting and/or access permitting process, as applicable.

Shiloh Road would remain a two-lane facility with substandard shoulders, inadequate clear zone, and deteriorating roadway conditions. The existing traffic signals with auxiliary turn lanes at King Avenue and Grand Avenue intersections would remain. Additionally, the right and left turn lanes (with no traffic signal) at the entrance to ZooMontana as well as Zoo Drive and Broadwater Avenue intersections would remain. The intersections at Hesper Road and Monad Road would continue to be stop-controlled intersections. Those two intersections currently have no turn lanes, but MDT plans to install a southbound left-turn lane at the Monad Road intersection in 2006. The other cross streets are stop-controlled on the east and west approaches to Shiloh Road. The City of Billings has recently installed a temporary traffic signal for the Central Avenue intersection. This traffic signal is intended to serve as an interim measure until the final selected alternative from this environmental process.

There would be no construction costs associated with the No Build Alternative.

Figure 2.2 No Build Alternative



## 2.2.2 Build Alternatives

The build alternatives include the following elements:

- Access Management,
- Intersection Control,
- Corridor Typical Section (roadway and pedestrian/bicycle components), and
- Design Treatments

The roadway typical section and the pedestrian and bicycle components for the corridor typical section are the same for all build alternatives and are described in detail in the sections that follow. As described under Section 2.1.2, an Access Management Plan would be developed for the Shiloh Road corridor, including Shiloh Road and the streets crossing the corridor. Design treatments for all the build alternatives include lighting (such as street lighting, lighting for raised medians, and possibly lighting for the multi-use path), landscaping, storm water management, and improved clear zones.

Upon completion of the project, maintenance of the roadway, street lighting, multi-use path and lighting, and landscaping would be the responsibility of various jurisdictions. The City, County, and MDT would enter into an agreement to formalize those maintenance responsibilities. It is expected that the City would maintain the newly constructed roadway between Zoo Drive and Poly Drive and that MDT would continue to maintain Shiloh Road south of Zoo Drive. The City and County would be responsible for maintaining the landscaping, street lighting, new multi-use path, and any new path lighting within their respective jurisdictions. The multi-use path would be maintained by the City if an easement or the right-of-way is transferred to the City. The County may enter into an agreement with the City to have the City maintain portions of the new path and any path lighting in the County. In addition, future development in the County could be annexed into the City. If annexation occurs, the maintenance costs and responsibilities could shift from the County to the City. Funding for the maintenance of the new street lights may come from a new SID. Under a SID, assessments would be spread upon the affected properties within the boundaries of the new SID as provided by State law.

As discussed throughout Section 1.3, the Shiloh Road corridor is currently functioning as an urban principal arterial serving both regional and community mobility. The *Billings Urban Area 2005 Transportation Plan* states that principal arterials should “favor mobility functions over land access functions” to “provide a high level of mobility.” At the same time, this corridor has been designated as an entryway to the community and is planned for commercial and residential development throughout the project area. The build alternatives for this project represent two approaches to balancing access needs and mobility needs in the corridor.

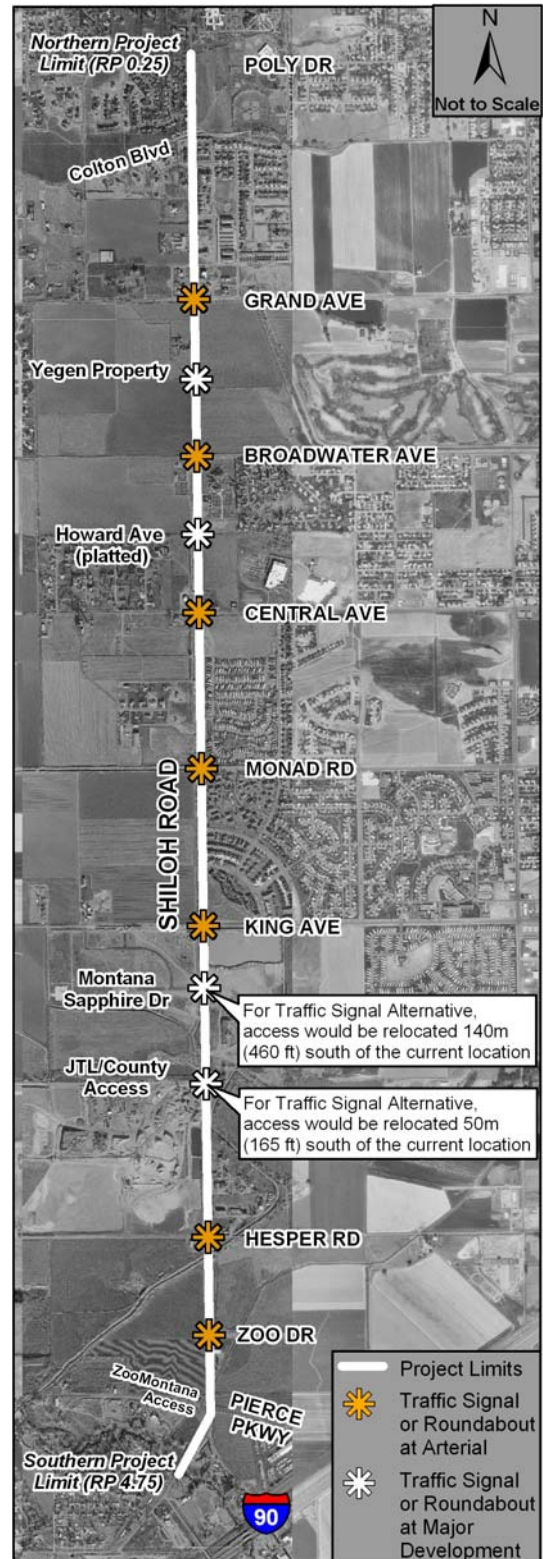
Through collaboration with City and County staff, MDT determined that the build alternatives should be applied as uniformly as appropriate throughout the project corridor. Therefore, each proposed build alternative has a consistent typical section and intersection type. The following four build alternatives are analyzed in this document and shown in Figures 2.3 and 2.4:

- Traffic Signals at Arterials Alternative
- Roundabouts at Arterials Alternative
- Traffic Signals at Arterials and Major Development Alternative
- Roundabouts at Arterials and Major Development Alternative

**Figure 2.3 Traffic Signals or Roundabouts at Arterials Alternatives**



**Figure 2.4 Traffic Signals or Roundabouts at Arterials and Major Development Alternatives**





These alternatives represent a range of access control locations. The first two build alternatives propose intersection control at seven locations corresponding with City-classified arterial street crossings including Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue (refer to Figure 2.3). The other two build alternatives propose intersection control at eleven locations including the same seven arterial street crossings plus four additional locations where major development is proposed. The proposed locations of intersection control are shown (refer to Figure 2.4).

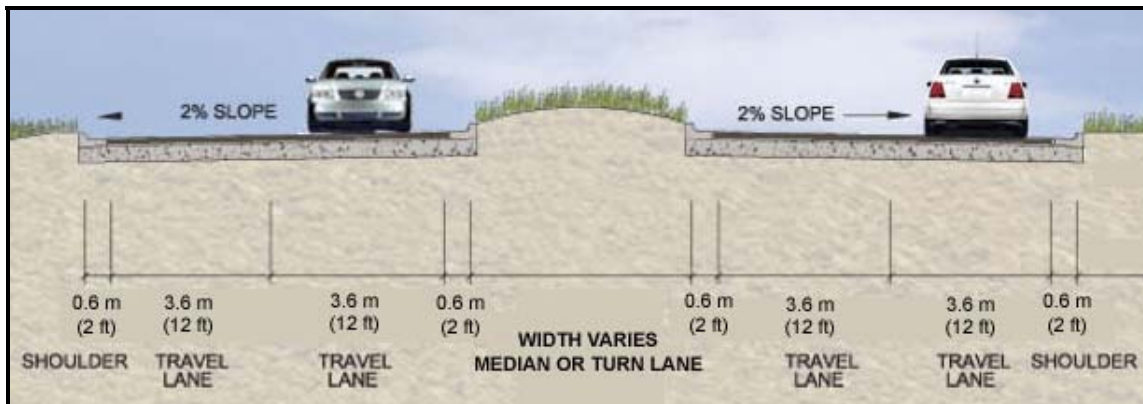
### 2.2.3 Corridor Typical Section

Shiloh Road is designated as an Urban Highway System Route and is planned for a substantial amount of commercial and residential development on both sides of the corridor. For this reason an urban typical section is proposed for the build alternatives (see Figure 2.5). The typical section includes several options for median or turn lane configurations in the center area.

For all build alternatives, the typical roadway section is an urban typical section. In general the proposed typical section would consist of the following elements. This typical section could vary depending on final design.

- 3.6-m (12-ft) travel lanes in each direction
- 0.6-m (2-ft) shoulders
- variable width raised median or turn lane (see description below)
- curb and gutter on each side of the road
- 3.6-m (12-ft) turn lanes with deceleration length provided on Shiloh Road at signalized intersections and major access locations (not required for roundabouts)
- variable width sidewalk (1.6 m [5.3 ft] typical) on one side of the road (distance from the edge of pavement would vary)
- 3.0-m (10-ft) wide multi-use path on one side of the road (distance from road would vary)

**Figure 2.5 Conceptual Roadway Typical Section**



Note: Figure is for conceptual purposes only and could vary depending on final design.

For the majority of the corridor, four travel lanes (two in each direction) would be required to accommodate 2027 AADT traffic volumes, which are projected to be between 23,900 and 38,100 vehicles per day. South of Zoo Drive projected 2027 traffic volumes are expected to be between 3,000 and 7,500 AADT. For that reason, only two travel lanes (one travel lane in each direction) are proposed south of Zoo Drive.

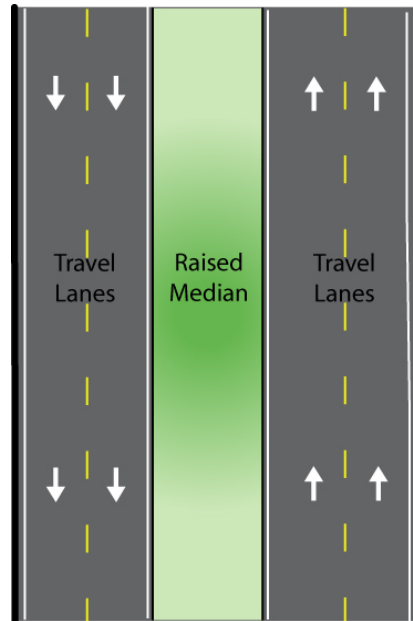
The section of Shiloh Road at Zoo Drive would transition from four travel lanes to two travel lanes. Between Zoo Drive and Pierce Parkway, the same project improvements are proposed, but with two travel lanes instead of four. South of Pierce Parkway, the roadway would begin to transition to the existing conditions at the north end of the Canyon Creek Bridge.

### ***Median or Turn Lane Configurations in the Center Area***

The typical cross section could include a variety of different median or turn lane configurations, as described below. The locations of the different configurations would depend on the conditions along the corridor. Variations of the design configurations could be incorporated based on the final access management plan. Consideration for other design configurations, such as median breaks for u-turns, would be analyzed further in the design phase.

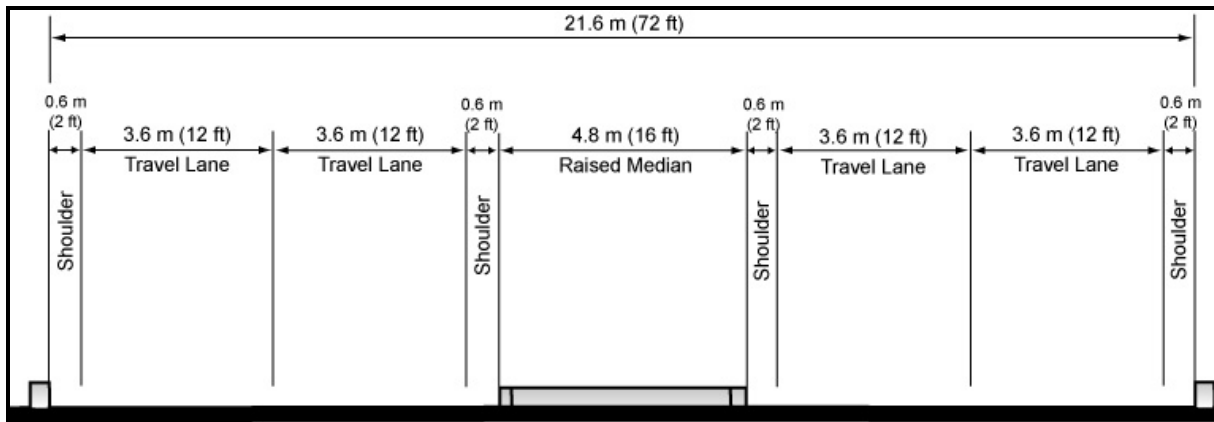
**Raised Median:** Would be used along the corridor to separate north and southbound traffic where no left-turn access is provided. The median would be approximately 4.8-m (16-ft) wide with 0.6-m (2-ft) shoulders on each side. The total paved width of the proposed roadway with a raised median in the center area would be approximately 21.6 m (72 ft) (see Figures 2.6 and 2.7). However, the specific median design would be determined during final design and the dimensions could vary depending on conditions along the corridor.

**Figure 2.6 Conceptual Raised Median – Plan View**



Note: Figure is for conceptual purposes only and could vary depending on final design.

**Figure 2.7 Conceptual Raised Median – Cross Section**

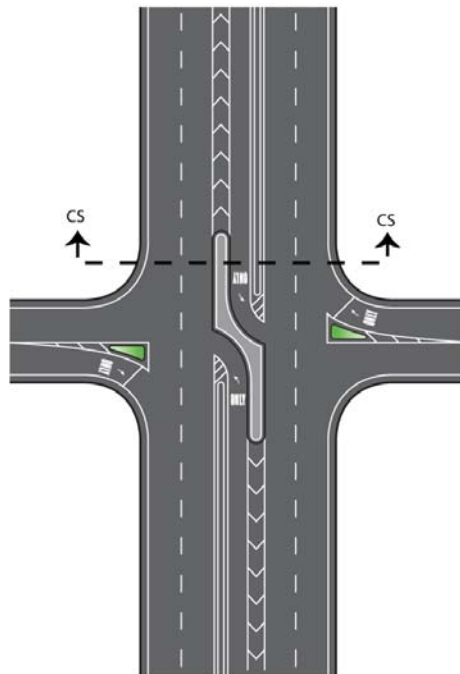


Note: Figure is for conceptual purposes only and could vary depending on final design.

- **Channelized Left-Turn Lanes**

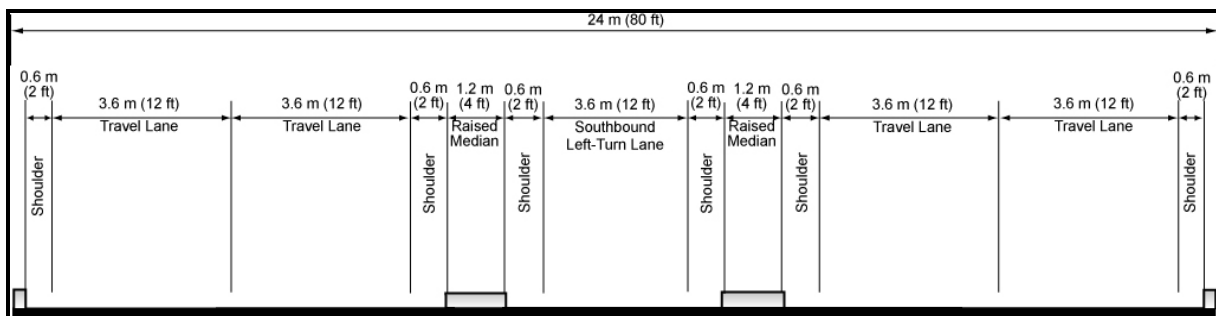
- Restricted Left-Turn Lane 3-Quarter Access:** Would be used to accommodate a left turn from Shiloh Road in one or both directions via a channelized turn lane(s). Left turns onto Shiloh Road would be restricted. This configuration is proposed at numerous accesses (existing or planned) along the corridor that are not City-classified arterial accesses (see Figures 2.8 and 2.9). The proposed accesses would be located at one-quarter mile increments from adjacent signalized or roundabout intersections. Raised median would also be utilized to prevent left turns onto Shiloh Road from side-streets. The total paved width of the roadway would be approximately 24.0 m (78.72 ft). However, the specific intersection design would be determined during final design and the dimensions could vary depending on conditions along the corridor.

**Figure 2.8 Conceptual Restricted Left-Turn Lane (3-Quarter Access) – Plan View**



Note: Figure is for conceptual purposes only and could vary depending on final design.

**Figure 2.9 Conceptual Restricted Left-Turn Lane (3-Quarter Access) – Cross Section**



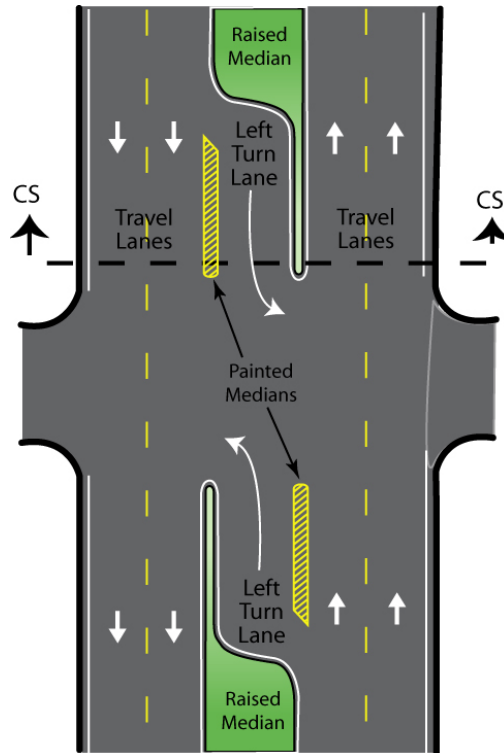
Note: Figure is for conceptual purposes only and could vary depending on final design.



- b) **Opposing Left-Turn Lanes:** Would be used to accommodate left turns in each direction via channelized turn lanes. This option is proposed for the Avenue B, Pierce Parkway/ZooMontana and Parkhill Drive intersections and for any signalized intersections, although the number of auxiliary lanes is variable.

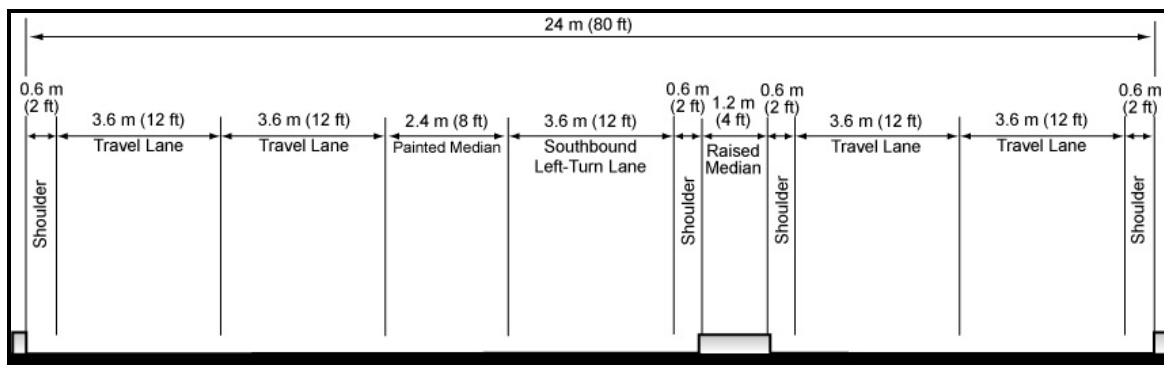
The left-turn lanes would be 3.6-m (12-ft) wide. The left-turn lanes would be separated from traffic traveling in the same direction by an approximately 2.4-m (8-ft) painted median. The total paved width of the roadway with opposing left-turn lanes in the center area would be approximately 24 m (80 ft) (see Figures 2.10 and 2.11). However, the specific intersection design would be determined during final design and the dimensions could vary depending on conditions along the corridor.

**Figure 2.10 Conceptual Opposing Left-Turn Lanes – Plan View**



Note: Figure is for conceptual purposes only and could vary depending on final design.

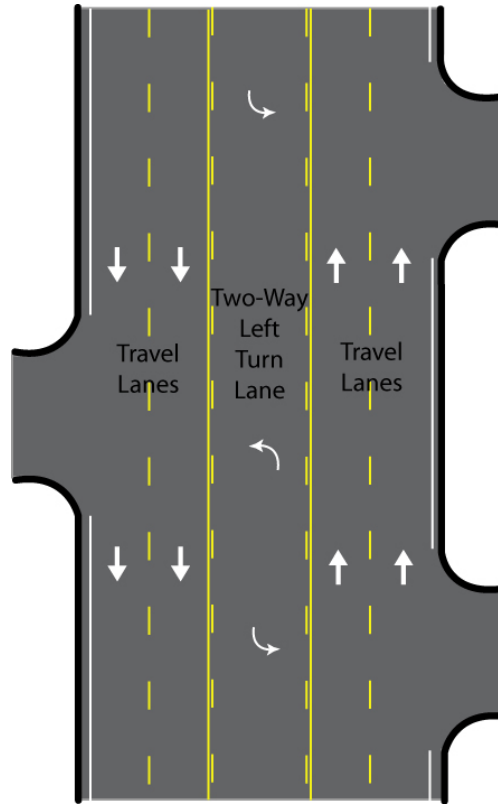
**Figure 2.11 Conceptual Opposing Left-Turn Lanes – Cross Section**



Note: Figure is for conceptual purposes only and could vary depending on final design.

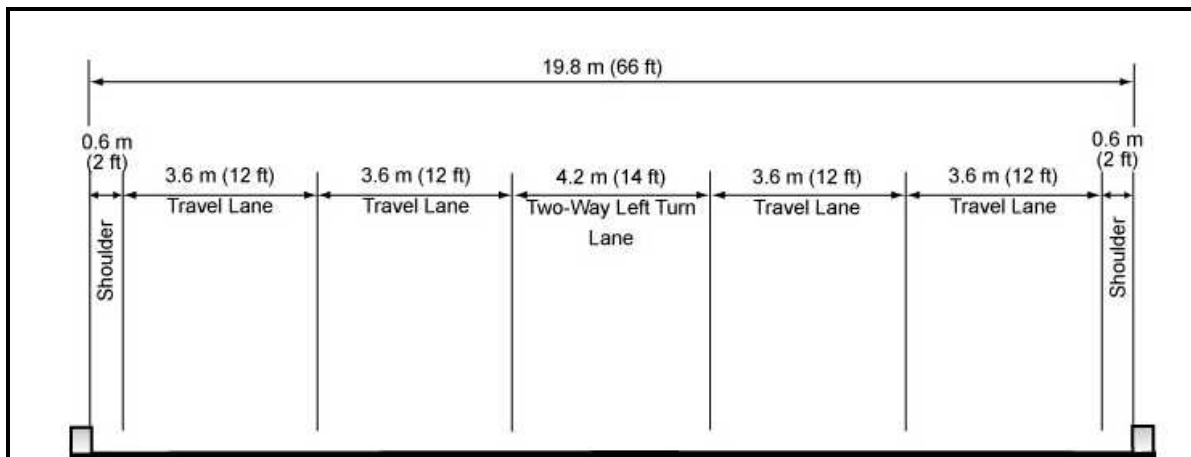
- c) **Two-Way Left-Turn Lane:** Would be used to accommodate left turns in areas with high access frequency. The only location in the corridor where those access needs have been identified is north of Grand Avenue. The two-way left-turn lane would be 4.2-m (14-ft) wide and the total paved width of the roadway with a two-way left-turn lane in the center area would be approximately 19.8 m (66 ft) (see Figures 2.12 and 2.13).

**Figure 2.12 Conceptual Two-Way Left-Turn Lane (TWLTL) – Plan View**



Note: Figure is for conceptual purposes only and could vary depending on final design.

**Figure 2.13 Conceptual TWLTL – Cross Section**



Note: Figure is for conceptual purposes only and could vary depending on final design.

### ***Pedestrian/Bicycle Components of All Build Alternatives***

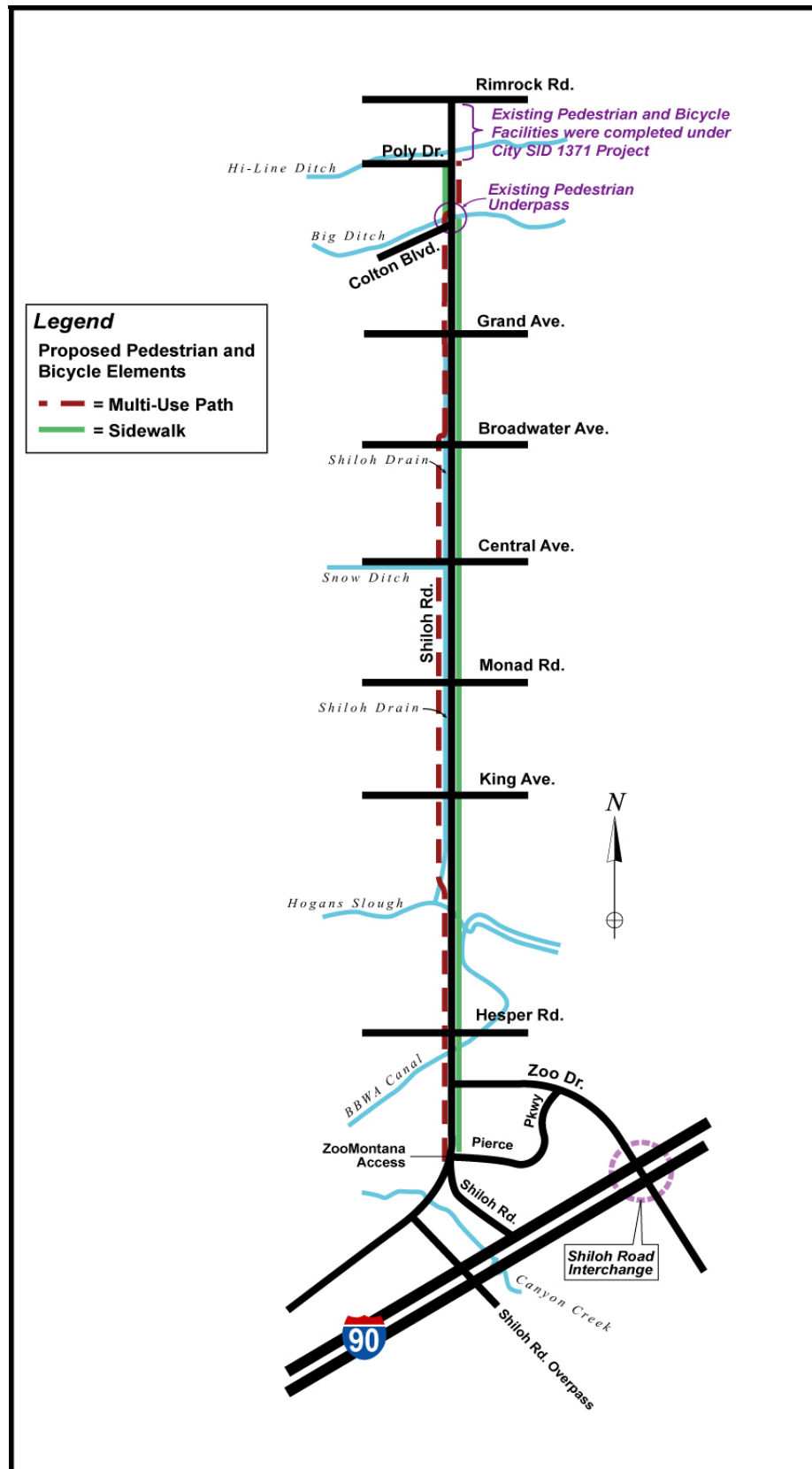
All build alternatives would include a 3-m (10-ft) wide multi-use path and a variable width sidewalk along the corridor as shown in Figure 2.14. Those facilities would connect to the existing pedestrian/bicycle underpass at Colton Boulevard. In addition, all build alternatives would accommodate at-grade pedestrian/bicycle crossings at one of the three locations identified in the *Heritage Trail Plan*: Monad Road. The Traffic Signals or Roundabouts at Arterials and Major Development Alternatives would provide at-grade crossings at all three locations: Hogan's Slough (at JTL/County access), Monad Road, and Howard Avenue.

#### **2.2.4 Intersection Control**

Based on the traffic analysis that was performed for this project (as discussed in Section 3.2.1), without improvements, the intersections at Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue are predicted to operate at or below LOS E during the peak traffic hours in the design year (2027). To address this anticipated traffic congestion, intersection improvements are being considered at as many as eleven locations on Shiloh Road within the project limits. Seven of the locations are at City-classified arterial cross-streets including Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue. Those intersections are proposed for intersection control improvements under two alternatives: 1) Traffic Signals at Arterials Alternative, and 2) Roundabouts at Arterials Alternative. Under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives, four additional locations are proposed for intersection control. Three of the intersections correspond with locations of major proposed development and include Montana Sapphire Drive, Howard Avenue, and the Yegen property. One of the intersections corresponds to a private industrial access (JTL Group and Yellowstone County) where large trucks enter and exit Shiloh Road on a regular basis.

MDT standards require that intersections be designed to accommodate a WB-20LM vehicle. The intersections are being designed to accommodate these larger vehicles because large trucks are frequent users of Shiloh Road, and large service vehicles are anticipated to serve future development. Shiloh Road also serves a primary connection for heavy vehicle traffic between I-90 and Highway 3 via Zimmerman Trail. Additionally, the City of Billings requested that the turn lanes for major intersection approaches along the corridor include adequate deceleration length to promote efficient traffic progression through the corridor.

**Figure 2.14 Proposed Multi-Use Path and Sidewalk Components**



This measure was incorporated in the proposed design at major intersections within the City's jurisdiction and at other major intersections wherever feasible.

In 2005 the Montana legislature approved House Joint Resolution 12, which encourages construction of roundabouts instead of right-angle intersections. The reasons for this resolution, as stated in the text of the resolution, are as follows:

- The Insurance Institute for Highway Safety reports that nationwide, fatal crashes at intersections increased 18 percent during the period between 1992 and 1998; and
- Modern roundabouts are designed to control traffic flow at intersections without the use of stop signs or traffic signals; and
- In recent years, there has been growing interest in the potential benefits of roundabouts and an increase in construction of roundabouts; and
- Although uncommon in Montana, other states and countries are constructing roundabouts as a safer alternative to intersections; and
- Arizona, California, Colorado, Florida, Maine, Maryland, Michigan, Mississippi, Nevada, South Carolina, Vermont, and Washington are among some of the states that are constructing modern roundabouts; and
- The absence of right angles, combined with the necessary reduction in speed, makes roundabouts safer for pedestrians and bicyclists as well as for motorists; and
- An eight-state study of 24 intersections before and after construction of roundabouts found a 39 percent decrease in crashes and a 76 percent decrease in crashes that resulted in injury; and
- Commercial motor vehicles contribute to the state's economy and the operation of commercial motor vehicles should be considered when roundabouts are designed; and
- Constructing properly designed roundabouts instead of right-angle intersections in Montana would likely reduce the number of crashes and the number of injuries suffered by Montana motorists. (HJ0012.02, 2005)

In compliance with this resolution, and in response to community input, both roundabouts and signalized intersections are being considered for this project. The signalized intersection is illustrated in Figure 2.15, and roundabout configurations are illustrated in Figures 2.16 – 2.19. Roundabouts would be designed to accommodate a maximum of four legs (northbound, southbound, eastbound and westbound). The actual intersection configuration would vary depending on the specific traffic characteristics of the intersection.

### Signalized Intersections

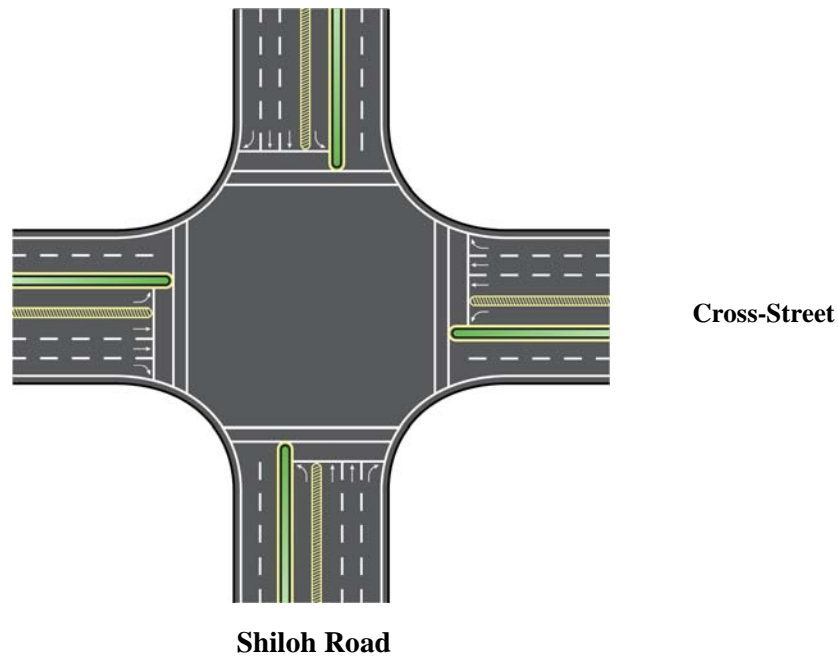
As described above, a range of seven to eleven intersections were considered for signalization in 2027. In the case of the intersections at King Avenue, Central Avenue, and Grand Avenue, which are already signalized, improvements are needed to accommodate the proposed corridor improvements and to improve capacity through 2027. With the exception of the intersection at Zoo Drive, all of the proposed signalized intersection configurations would include two travel lanes in the northbound (NB) and southbound (SB) directions with opposing left-turn lanes on Shiloh Road. There would be only one travel lane in the southbound direction on Shiloh Road at Zoo Drive as this is the location where the roadway cross section transitions from four travel lanes to two travel lanes. The cross-streets at each of the eleven intersections would include opposing left-turn lanes and one or two travel lanes in

the eastbound (EB) and westbound (WB) directions depending on capacity requirements. Turn lanes would be sufficient in length to accommodate vehicle queues and provide adequate deceleration. The specific intersection design would be determined during final design.

The proposed intersection configurations that are being evaluated as part of the alternatives were designed to accommodate the traffic volumes projected for 2027. On opening day (anticipated in year 2010) signals would not be installed at Zoo Drive under the Traffic Signals at Arterials Alternative because traffic volumes in the near future do not warrant the need for a signal. Under this alternative, the Zoo Drive intersection would be constructed in 2010, but the signal poles and signal would not be installed. Under the Traffic Signals at Arterials and Major Development Alternative, the Zoo Drive, JTL/County access, Montana Sapphire Drive, Howard Avenue, and Yegen property signals would not be installed on opening day. These intersections would be constructed in 2010 (providing full access), but the signal poles and signal would not be installed until traffic volumes warrant a signal. Therefore, the construction costs of the traffic signal alternatives do not include the cost of a traffic signal at these locations because they would not be implemented at this time. Traffic signals would be implemented at these locations as traffic volumes warrant the need for a signal.

For the Traffic Signals at Arterials Alternative, the construction cost is estimated to be \$26.2 – 33.2 million (in 2009 dollars). For the Traffic Signals at Arterials and Major Development Alternative, the construction cost is estimated to be \$27.8 – 36.4 million (in 2009 dollars).

**Figure 2.15 Conceptual Signalized Intersection Configuration**



Note: Figure is for conceptual purposes only and could vary depending on final design.

Table 2.2 shows the proposed intersection configurations for the signalized alternatives evaluated in the EA.

**Table 2.2 Intersection Configurations for Signalized Alternatives in 2027**

Intersection with Shiloh Road	Traffic Signals at Arterials Alternative		Traffic Signals at Arterials and Major Development Alternative	
	Shiloh Road (NB and SB)	Cross Street (EB and WB)	Shiloh Road (NB and SB)	Cross Street (EB and WB)
Zoo Drive	<ul style="list-style-type: none"> <li>Two travel lanes NB and one travel lane SB</li> <li>Opposing left-turn lanes with dual left-turn lanes SB</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes with dual left-turn lanes EB</li> <li>Right-turn slip lane WB</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals at Arterials Alternative</li> </ul>	
Hesper Road	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> <li>Right-turn lane on WB approach</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals at Arterials Alternative</li> </ul>	
JTL/County Access	<ul style="list-style-type: none"> <li>Limited Access: RI/RO w/ left-into JTL/County access</li> </ul>	<ul style="list-style-type: none"> <li>Limited Access: RI/RO</li> </ul>	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> </ul>
Montana Sapphire Drive	<ul style="list-style-type: none"> <li>Limited Access: RI/RO w/ left-in</li> </ul>	<ul style="list-style-type: none"> <li>Limited Access: RI/RO</li> </ul>	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> </ul>
King Avenue	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing dual left-turn lanes</li> <li>Right-turn lanes</li> </ul>		<ul style="list-style-type: none"> <li>Same as Traffic Signals at Arterials, except opposing left-turn lanes are single lane only</li> </ul>	
Monad Road	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals at Arterials Alternative</li> </ul>	

**Table 2.2 Intersection Configurations for Signalized Alternatives in 2027 (cont.)**

Intersection with Shiloh Road	Traffic Signals at Arterials Alternative		Traffic Signals at Arterials and Major Development Alternative	
	Shiloh Road (NB and SB)	Cross Street (EB and WB)	Shiloh Road (NB and SB)	Cross Street (EB and WB)
Central Avenue	<ul style="list-style-type: none"> <li>Two travel lanes NB and SB</li> <li>Opposing left-turn lanes</li> <li>NB right-turn lane</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane EB and WB</li> <li>Opposing left-turn lanes with dual left on WB approach</li> <li>EB and WB right-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals at Arterials Alternative</li> </ul>	
Howard Avenue	<ul style="list-style-type: none"> <li>Limited Access: RI/RO w/ left-into Howard and east approach</li> </ul>	<ul style="list-style-type: none"> <li>Limited Access: RI/RO</li> </ul>	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> </ul>
Broadwater Avenue	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> <li>Right-turn lane on NB approach</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> <li>Right-turn lane on WB approach</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals with Arterials Alternative</li> </ul>	
Yegen Property Access	<ul style="list-style-type: none"> <li>Limited Access: RI/RO w/ left-into Yegen property</li> </ul>	<ul style="list-style-type: none"> <li>Limited Access: RI/RO</li> </ul>	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>One travel lane in each direction</li> <li>Opposing left-turn lanes</li> </ul>
Grand Avenue	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing dual left-turn lanes</li> <li>Right-turn lane on NB approach</li> </ul>	<ul style="list-style-type: none"> <li>Two travel lanes in each direction</li> <li>Opposing left-turn lanes</li> <li>Right-turn lanes</li> </ul>	<ul style="list-style-type: none"> <li>Same as Traffic Signals with Arterials</li> </ul>	

Source: Engineering, Inc., August 2006 – personal communication

RI/RO = right-in/right-out, NB = northbound, SB = southbound, EB = eastbound, and WB = westbound

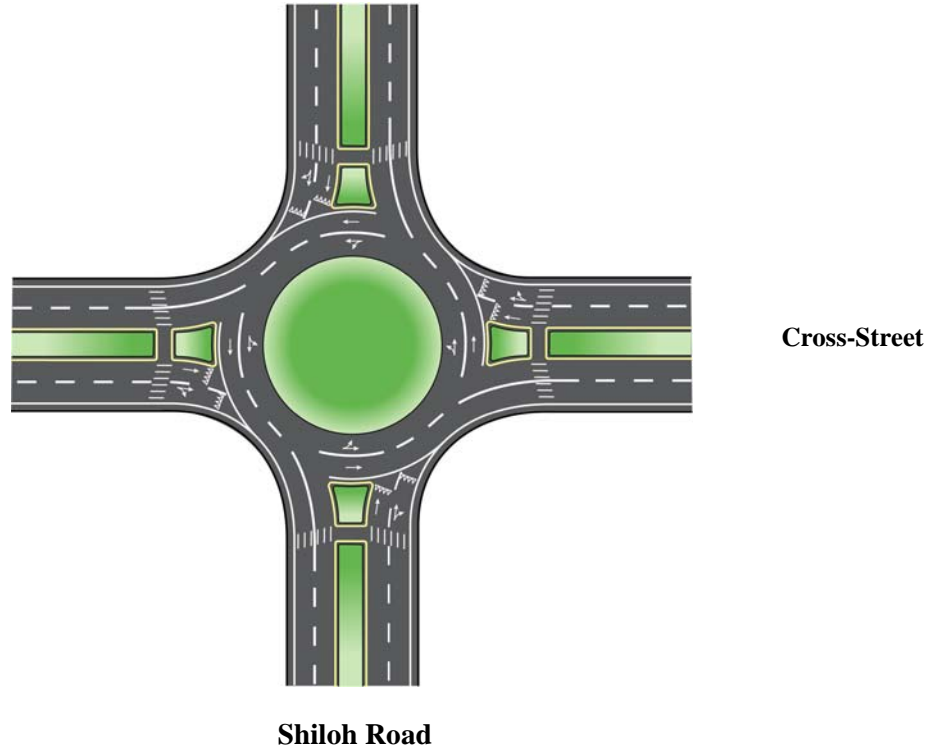
## Roundabouts

All of the intersections that are being considered for signalized intersection improvements were also considered for implementation of a modern roundabout. A modern roundabout is a one-way circular intersection without traffic signal equipment in which traffic flows counterclockwise around a center island. The modern roundabout operates with yield control at entry points, and gives priority to vehicles within the roundabout. Vehicular right-of-way is the primary difference between a modern roundabout and an older-style rotary (traffic circle) like those found in some east coast and European cities. In the rotary (traffic circle), drivers inside the circle must yield to vehicles entering the circle,



which can result in operational and safety problems, especially at higher traffic volumes. Figure 2.16 illustrates a typical roundabout configuration.

**Figure 2.16 Conceptual Roundabout Configuration**



Note: Figure is for conceptual purposes only and could vary depending on final design.

Intersections were analyzed for the design year (2027) during the design hour (PM peak hour) and the AM peak hour utilizing both aaSidra 2.0 software and RODEL traffic analysis software. All of the intersections were analyzed through an iterative process to determine the minimum lane configurations required to minimize delay and vehicular queuing and achieve an acceptable LOS. Geometric configurations were determined so that the WB-20LM design vehicle could pass through the roundabout side-by-side with a passenger car. The proposed roundabouts would include circulatory lane widths of approximately 4.0 m (13 ft) inside travel lane and a 6 m (20 ft) for the outside travel lane where required.

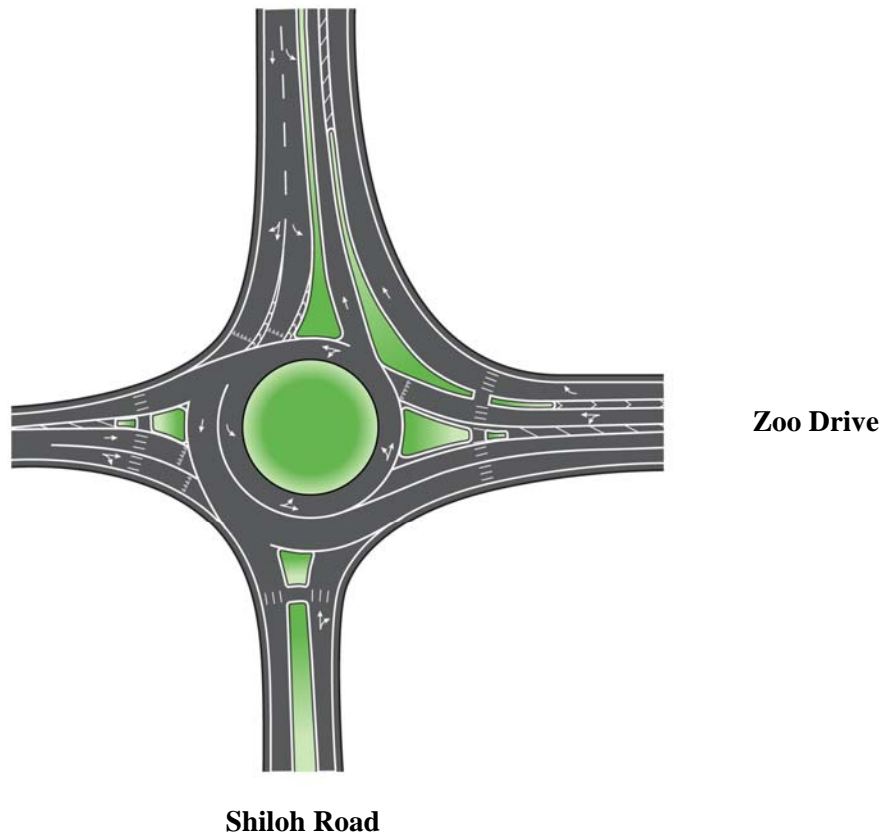
When there are two circulatory lanes in the roundabout, the lane adjacent to the central island (inside lane) allows through movements, left-turns and u-turns. The outer lane allows only through movements and right turns. No turn lanes are necessary with roundabouts because incoming traffic is slowed and routed in a counter-clockwise direction through the roundabout.

Roundabouts would be designed to accommodate a maximum of four legs (northbound, southbound, eastbound and westbound). With the exception of the intersection at Zoo Drive and King Avenue, all of the proposed roundabout configurations include two travel lanes in each direction on Shiloh Road. The cross-streets at each of the intersections proposed for a roundabout include one or two lanes entering the roundabout depending on capacity requirements. For the Roundabouts at Arterials Alternative only, Zoo Drive may include a slip lane and King Avenue may include a semi-slip lane. A right-turn slip lane, as shown at the Zoo Drive roundabout intersection, is an exclusive right-turn lane

that allows vehicles to bypass the intersection entirely without stopping or yielding. A semi-slip lane, as shown for the King Avenue intersection, is an exclusive right-turn lane requiring motorists to yield to circulating traffic without actually entering the circulating stream of traffic. The semi-slip lane shown for the King Avenue intersection also requires the right-turning traffic to merge with northbound traffic a short distance north of the intersection. Because a full-access intersection would be provided at the JTL/County access and Montana Sapphire Drive, a semi-slip lane at King Avenue would not be required under the Roundabouts at Arterials and Major Development Alternative. Slip lanes and semi-slip lanes are proposed when high traffic volumes are anticipated for a right-turn movement. The configurations at Zoo Drive and King Avenue are described below.

For Zoo Drive, there is only one through travel lane in each direction on Shiloh Road as this is the location where the roadway cross section transitions from four travel lanes to two travel lanes. Additionally, for both the roundabout alternatives, there may be a slip lane constructed for the westbound approach to accommodate the high volume of traffic heading north on Shiloh Road from Zoo Drive, as shown in Figure 2.17.

**Figure 2.17 Conceptual Roundabout Configuration with Slip Lane (Zoo Drive)**



Note: Figure is for conceptual purposes only and could vary depending on final design.

In 2027, the roundabout configuration at King Avenue would include three travel lanes for the northbound and southbound approaches, as shown in Figure 2.18. The inside lane would be used for left turns and u-turns while the two outer lanes would be used for through travel or right turns. The proposed configuration for the Roundabouts at Arterials Alternative at this intersection may also include a semi-slip lane on the westbound approach, as shown in Figure 2.19. Initially the roundabout

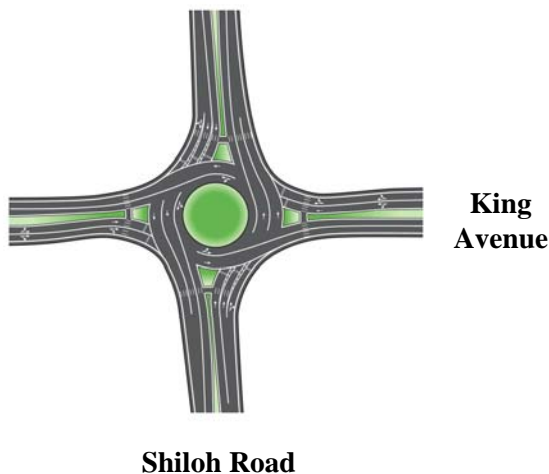
would be constructed with only two northbound and southbound travel lanes on Shiloh Road, and two eastbound and westbound travel lanes on King Avenue, but it would be built so that it could easily be modified to three lanes once they are needed.

The proposed intersection configurations that are being evaluated as part of the alternatives were designed to accommodate the traffic volumes projected for 2027. On opening day (anticipated in year 2010) roundabouts may not be installed at some of these intersections because in the near term, the level of traffic would not warrant roundabouts. On opening day (anticipated in year 2010), roundabouts would be installed at all seven intersections under the Roundabouts at Arterials Alternative.

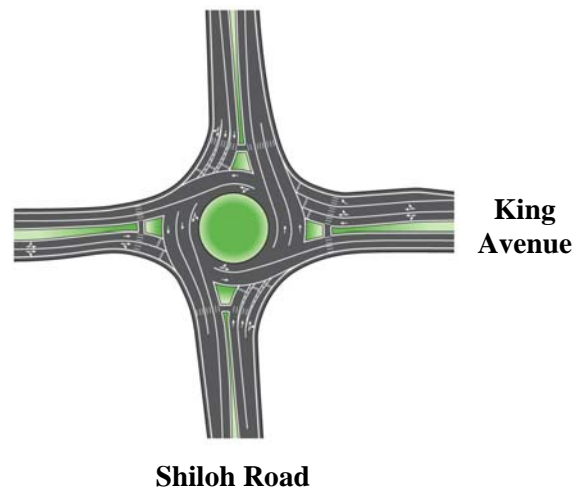
Under the Roundabout at Arterials and Major Development Alternative, Montana Sapphire Drive, Howard Avenue, and Yegen property roundabouts would not be installed on opening day. On opening day there would be a full-access median break at these locations. Even though it has low traffic volumes, the JTL/County access would receive a roundabout on opening day in order to provide safe access for long trucks entering and exiting the site.

For the Roundabouts at Arterials Alternative, the construction cost is estimated to be \$24.0 – 27.8 million (in 2009 dollars). For the Roundabouts at Arterials and Major Development Alternative, the construction cost is estimated to be \$25.9 – 30.8 million (in 2009 dollars).

**Figure 2.18 Conceptual Future 3-Lane Roundabout Configuration (King Avenue)**



**Figure 2.19 Conceptual Future 3-Lane Roundabout Configuration with Semi-Slip Lane (King Avenue)**



Note: Figures are for conceptual purposes only and could vary depending on final design.

## 2.3 SELECTION OF THE PREFERRED ALTERNATIVE

All build alternatives meet the project purpose and needs by improving mobility and safety within the Shiloh corridor. However, MDT and FHWA have identified a Preferred Alternative. The Preferred Alternative includes eight roundabouts (see Figure 2.20).

Figure 2.20 Preferred Alternative



Modern roundabouts were selected over traffic signals because, for this corridor, roundabouts would provide:

- slightly better LOS,
- slightly reduced travel time,
- potentially greater reduction in crash rates and severity, and
- reduced ROW acquisition requirements.

The locations of the eight roundabouts are a combination of intersections identified in all of the build alternatives. Seven of the roundabouts are at the intersections with City-classified arterials as assessed in the Roundabouts at Arterials Alternative (Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue). The eighth roundabout is at the JTL/County access, which was assessed in the Roundabouts at Arterials and Major Development Alternative.

To promote through mobility, full access was limited to the seven City-classified arterials as shown in the Roundabouts with Arterials Alternative. The JTL/County access was included because it meets two criteria: it addresses a potential safety concern and it meets the one-half mile spacing typical of arterials.

A roundabout at the JTL/County access would improve safety for all drivers on Shiloh Road by allowing the long gravel trucks to enter onto Shiloh Road safely. A roundabout at the JTL/County access would provide one-half mile spacing between King Avenue and Hesper Road. That one-half mile spacing is typical of the arterials in the corridor. Typical traffic engineering practice is to space arterials and major intersections at one-half mile intervals, thus providing a balance between access and mobility. The one-half mile spacing throughout the Shiloh Road corridor provides a reasonable distance for turn around movements (u-turns) where left-turns are restricted. The spacing also distributes traffic more evenly on cross streets or side roads, which optimizes intersection operations and maintains corridor mobility.

On opening day (anticipated in year 2010), roundabouts would be installed at the eight intersections discussed above. The other three locations identified for roundabouts under the Roundabouts at Arterials and Major Development Alternative would have three-quarter access (right-in, right-out, and left-in), when needed, under the Preferred Alternative. It is likely Howard Avenue and Montana Sapphire Drive would need three-quarter access on opening day.

The Preferred Alternative is consistent with guidance offered by the Project Advisory Committee and the Billings City Council. A copy of the September 11, 2006 Council Summary is included in Appendix B.

Elements of the Preferred Alternative are summarized below.

#### **Corridor Typical Section:** Urban Typical Section

Poly Drive to Zoo Drive – four 3.6-m (12-ft) travel lanes, median, curb and gutter. Between Poly Drive and Colton Boulevard the median would be a two-way left-turn lane, and south of Colton Boulevard the median is raised and varies to accommodate the access management plan.

Zoo Drive to Pierce Parkway – transition to two 3.6-m (12-ft) travel lanes.

Pierce Parkway to Canyon Creek Bridge – transition to existing two-lane roadway.

Pedestrian and Bicycle Elements – Multi-use path and sidewalk from Poly Drive to the ZooMontana access road.

**Design Treatments:** Landscaping, lighting (such as street lighting, lighting for raised medians, and possibly lighting for the multi-use path), storm water management, and improved clear zones.

**Access Management Plan:** The Access Management Plan, consistent with MDT access control guidelines, is based on the “developed” access category for the corridor section between Poly Drive and Grand Avenue and the “intermediate” category south of Grand Avenue. The plan would support the Billings area street grid system which has principal arterials on one-mile spacing (Hesper Road, King Avenue, Central Avenue, and Grand Avenue) and minor arterials on half-mile spacing (Monad Road and Broadwater Avenue). Zoo Drive is also identified in City plans as a principal arterial because it connects to the interstate. The Access Management Plan for the corridor would consist of the following criteria:

- Full access intersections at all City-classified arterial public roads or one-half mile spacing. Roundabouts would be implemented for intersection control at the full access intersections: Zoo Drive, Hesper Road, JTL/County access, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue.
- A two-way left-turn lane would be implemented between Poly Drive and Colton Boulevard due to the numerous existing accesses.
- Three-quarter access would be implemented at appropriate existing locations and at appropriate one-quarter mile spacing intervals from major intersections. Three-quarter access provides a right-in, right-out and left-in movement.
- Right-in, right-out access would be implemented at other locations consistent with the locations or spacing guidelines identified in MDT’s Access Management Plan to be developed for this project.
- After the Access Management Plan is finalized, it would be implemented by MDT in conjunction with an access control resolution approved by the Montana Transportation Commission.
- Future access that is not constructed as part of this project would be considered through the City and County platting and/or access permitting process, as applicable.

**Intersection Control:** The roundabouts at Zoo Drive, Hesper Road, JTL/County access, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue would be implemented for opening day (anticipated in year 2010).

## **2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED**

### **2.4.1 Typical Sections Considered but Eliminated**

#### **Rural Typical Section**

At the first public meeting, some attendees requested that a rural typical section be considered for the Shiloh Road reconstruction in an effort to preserve the rural nature of the corridor. A rural alternative was subsequently evaluated for this project. However, most of the adjacent rural properties in the

corridor have been purchased and platted, prior to and over the course of this project, for some form of commercial, retail, or residential development. As a result, community support for the alternative diminished.

Because the rural typical section has a depressed median, roadside drainage ditches, and 1.8-m (6-ft) wide shoulders, the footprint of this facility is wider than an urban typical section. As a result, the cost of this alternative as compared with the urban typical section would be higher due to increased ROW acquisition. Additionally, in this corridor, a rural typical section would likely have greater impacts to adjacent residences, businesses, parks, farmlands, wetland areas, and cultural resources. The primary benefits of a rural typical section include (1) additional recovery room for errant vehicles due to the wider shoulders, and (2) increased separation between the sidewalk and the travel lanes due to the wider shoulders and the drainage ditches. However, in this corridor those benefits do not justify the higher cost and increased impacts to adjacent property owners and community and natural resources when compared to the urban typical section which provides the same safety and mobility benefits. Therefore, this alternative was eliminated from further consideration.

### **Six-Lane (Three Travel Lanes in Each Direction) Facility with Turn Lanes**

At the first public meeting, it was suggested that Shiloh Road should be improved to include six travel lanes (three in each direction) with turn lanes, in an effort to avoid future capacity issues. That suggestion was considered, but based on the traffic analysis that was performed for this project (as discussed in Section 3.2.1) only four travel lanes (two in each direction) with turn lanes are warranted to accommodate projected traffic volumes through the design year (2027). MDT and FHWA do not construct facilities that are not warranted within the twenty-year design life because the traffic benefits are not sufficient to justify the additional cost. Additionally, in this corridor, the impacts to community and natural resources would increase due to the increased width of a six-lane facility. Therefore, this alternative was not carried forward for detailed evaluation in this EA.

## **2.4.2 Intersection Types Considered but Eliminated**

### **Mixed Intersection Types**

City, County, and MDT staff recommended that uniform intersection treatments (i.e., signals or roundabouts) be implemented for safety reasons. Drivers expect uniform treatment of intersections. Interspersing roundabouts and traffic signals could create driver confusion and adversely affect safety. As a result, interspersing roundabouts and signalized intersections was eliminated from further consideration.

### **Grade Separation at Intersections**

At the first public meeting, it was suggested that certain intersections should be reconstructed as grade-separated intersections to improve safety and capacity. Based on the traffic analysis that was performed for this project (as discussed in Section 3.2.1), at-grade intersections are sufficient to accommodate projected traffic volumes through the design year (2027). Additionally, the safety benefits of grade-separated intersections in comparison to roundabouts, which are being evaluated as an intersection alternative, are marginal. As a result, the potential benefits of building grade-separated intersections instead of at-grade intersections are not sufficient to justify the additional cost. Additionally, in this corridor, potential impacts to community and natural resources would increase due to the increased space requirements of grade-separated intersections. Therefore, this alternative was not carried forward for detailed evaluation in this EA.



## **Design Zoo Drive Intersection as a Continuous Route Instead of a “T” Intersection**

Another alternative suggested by the community at the first public meeting was that Zoo Drive should be a continuous route for vehicles traveling between I-90 and Shiloh Road north of Zoo Drive. That suggestion was considered, but based on the projected traffic volumes for the design year (2027), and to provide access to the property west of Shiloh Road, a signalized intersection or a roundabout is needed. As a result, this alternative was not carried forward for detailed evaluation in the EA.

### **2.4.3 Grade-Separated Pedestrian/Bicycle Crossings Considered but Eliminated**

The *Heritage Trail Plan* proposes grade-separated pedestrian/bicycle crossings at the proposed Hogan’s Slough multi-use trail, the proposed primary bikeway at Monad Road, and the proposed secondary bikeway at Howard Avenue, which traverses the MSU Billings College of Technology campus. These grade-separated crossings were assessed as described below.

#### **Hogan’s Slough Grade-Separated Pedestrian/Bicycle Crossing**

At this location, a grade-separated pedestrian/bicycle crossing under Shiloh Road must be kept above Hogan’s Slough water surface elevation because of potential flooding risks. This would require elevating the existing roadway which would alter or increase flood risks associated with Hogan’s Slough. The Shiloh Road Corridor project proposes to construct the Shiloh roadway to match existing grade to not aggravate any flooding risks associated with Hogan’s Slough; therefore, a pedestrian underpass is not feasible. A pedestrian/bicycle overpass of Shiloh Road at this location would result in wetland impacts related to constructing the bridge and associated approach ramps. In addition, an overpass would not be consistent with the corridor character design criterion to minimize adverse aesthetic impacts. For these reasons, grade-separated pedestrian/bicycle crossings at this location were eliminated from further consideration for this project. Although the grade-separated pedestrian/bicycle crossing is eliminated at Hogan’s Slough, an at-grade pedestrian crossing at the JTL/County access near Hogan’s Slough would be feasible and has been carried forward for inclusion in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives, as well as the Preferred Alternative.

#### **Monad Road Grade-Separated Pedestrian/Bicycle Crossing**

A pedestrian/bicycle underpass was considered in this location; however, flooding of the below-grade crossing could result in potential safety risks to users or extensive and costly water management to control flooding. In addition, the City is investigating the use of Shiloh Drain for storm water detention; therefore, placing the below-grade path in the Shiloh Drain at this location could make it difficult to operate and maintain the pedestrian/bicycle underpass. For these safety reasons, a pedestrian/bicycle underpass was eliminated from further consideration. An above-grade crossing to the north or south side of Monad Road was also considered. Existing development would preclude the construction of ramps and structures for the overpass in the southeast corner of the intersection. If an overpass was located on the north side, the park/open space area for the mobile home community in the northeast corner of the intersection would also be adversely affected through the removal of trees and the acquisition of land. In addition, an overpass would not be consistent with the corridor character design criterion to minimize adverse aesthetic impacts. For these reasons, a grade-separated pedestrian/bicycle crossing at this location was eliminated from further consideration for this project. Although the grade-separated pedestrian crossing is eliminated, an at-grade pedestrian crossing at Monad Road would be feasible and has been carried forward for inclusion in all build alternatives, including the Preferred Alternative.



## **Howard Avenue**

A grade-separated pedestrian/bicycle crossing under Shiloh Road at this location would require a complex design since the structure would lie in the Shiloh Drain on the west side of Shiloh Road. To reach the top of the embankment after crossing under Shiloh Road, the ramp would need to be constructed up the west bank of the Shiloh Drain. Also, wetlands in this area of Shiloh Drain would be impacted. In addition, a below-grade crossing at this location could also be inundated during storm events due to rising waters in Shiloh Drain, particularly if the City were to use Shiloh Drain for storm water detention. Flooding of the below-grade crossing could result in potential safety risks to users or extensive water management to control flooding, which would be costly. For these safety reasons, a pedestrian/bicycle underpass was eliminated from further consideration. Construction of a pedestrian/bicycle overpass at this location could also require extensive ROW from undeveloped parcels. The design of the eastern approach would be difficult and require extensive ROW because of an additional elevation gradient between the roadway and the adjacent properties which lie several feet below Shiloh Road. This extensive land requirement would increase costs. In addition, an overpass would not be consistent with the corridor character design criterion to minimize adverse aesthetic impacts. For these reasons, a grade-separated pedestrian/bicycle crossing at this location was eliminated from further consideration for this project. Although the grade-separated pedestrian crossing is eliminated, an at-grade pedestrian crossing at Howard Avenue would be feasible and has been carried forward for inclusion in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives, as well as the Preferred Alternative.

### **2.4.4 Other Alternatives Considered but Eliminated**

#### **Delay Improvements to Shiloh Road Until a Plan to Protect against Flood Hazards Has Been Implemented**

Shiloh Road would be designed to maintain the current vertical alignment and hydraulic conveyance capacity in the vicinity of the Hogan's Slough area in order to have no impact on the flooding risk that currently exists. Therefore, the suggestion to delay improvements was eliminated from further consideration.

#### **Limit Heavy Truck Traffic**

Under Federal regulation (23 CFR 658), MDT cannot restrict access to commercial trucks within one road-mile of the national network, which consists of the Interstate system (I-90) and primary highways. This requirement would be applicable to the portion of Shiloh Road south of Hesper Road. Restricting truck traffic on segments north of Hesper Road would restrict truck access to existing businesses. MDT cannot restrict truck access to existing businesses without assessing the economic impacts, allowing public comment, and possibly providing compensation to the businesses. Additionally, the Shiloh Road corridor is important to regional mobility and provides a connection between I-90 and Highway 3 via Zimmerman Trail. Restricting "pass through" commercial truck traffic would limit the regional mobility of these users. For these reasons, this alternative was eliminated from further consideration.

#### **Place Overhead Utility Lines Underground in Shiloh Road Corridor**

During public meetings it was suggested that overhead utility lines (transmission and distribution lines) along Shiloh Road be placed underground. Relocation onto new common poles would cost approximately \$1.0 million and burying utilities underground would cost approximately \$4.0 million. Based on these cost estimates it was determined that burying the utility lines underground would be cost prohibitive. Therefore, the suggestion to bury overhead utility lines along Shiloh Road was eliminated from further consideration.

### **3.0 IMPACTS**

This section provides an assessment of how the No Build and build alternatives are likely to affect the social, economic, and physical environment through comparison of potential impacts and effects of the build alternatives and the No Build Alternative. This assessment was conducted in accordance with guidance provided by the National Environmental Policy Act (NEPA, 42 USC 4332 (2)(c)), Montana Environmental Policy Act (MEPA, 2-3-104 and 75-1-201 MCA), MDT, and the FHWA Technical Advisory T6640.8A.

Secondary impacts as well as construction and cumulative impacts of the proposed improvements are also discussed.

#### **3.1 TOPIC AREAS WITH NO IMPACTS**

##### **3.1.1 Environmental Justice – Executive Order 12898/Title VI**

The environmental and social impacts of this project would be distributed evenly along the corridor and would not affect any community more so than another. The proposed build alternatives would not have a disproportionately high or adverse human health or environmental impact on minority and/or low income populations in the project area. Therefore, this project complies with Executive Order (EO) 12898, issued in February 1994. The proposed build alternatives also comply with the provisions of Title VI of the Civil Rights Act of 1964 (42 USC 2000(d), as amended) as per FHWA's regulation (23 CFR 200).

##### **3.1.2 Wild and Scenic Rivers**

No Wild and Scenic Rivers have been identified in the study area; therefore, no impacts to Wild and Scenic Rivers would occur due to the proposed project.

##### **3.1.3 Threatened and Endangered Species**

The Endangered Species Act (ESA) directs federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the existence of any threatened, endangered, or candidate species, nor result in the destruction or modification of their critical habitat. Procedures outlined by the U.S. Fish and Wildlife Service (USFWS) were followed in determining if any threatened, endangered, or candidate species occur in the vicinity of the proposed project, including agency consultation and a review of published and unpublished literature for threatened, endangered, and special status species. According to correspondence from the USFWS, bald eagle (federally threatened) is listed as potentially occurring in the project corridor (see Appendix B). Based on research and field investigations, it was determined that there is no occurrence or anticipated occurrence of any listed, proposed, or candidate species in the project area. Therefore, there would be no effect to threatened, endangered, proposed, or candidate species, nor to critical habitat due to the proposed project.

##### **3.1.4 L&WCF – Section 6(f)**

Section 6(f) concerns sites and or facilities acquired or improved with allocations under that part of the Land & Water Conservation Fund Act, 16 USC 460L et seq. or LWCF. Resources that have been purchased using LWCF cannot be converted to highway uses without the approval of the Department of Interior's National Park Service (NPS). Section 6(f) directs the NPS to assure that replacement lands of

equal value, location, and usefulness are provided to mitigate conversions of these lands for highway use.

Two Section 6(f) properties were identified in the project area by MFWP, which administers this program in Montana. These include the ZooMontana and Poly Vista Park. Poly Vista Park is located near the north end of the project corridor approximately 200 m (656 ft) east of Shiloh Road. ZooMontana is located near the southern end of the project corridor adjacent to Shiloh Road on the west. Both of these properties are outside of the proposed ROW and construction limits for all of the build alternatives. Therefore, there would be no impacts to Section 6(f) resources under any of the build alternatives.

## 3.2 EFFECTS ON THE TRANSPORTATION SYSTEM

This section describes the existing and future conditions of the transportation system in the Shiloh Road corridor between the Canyon Creek Bridge (RP [MP] 4.75) and Poly Drive (RP [MP] 0.25).

### 3.2.1 Traffic

The Preliminary Traffic Report for the Shiloh Road Corridor Phase 1 (Engineering Inc., July 2005) analyzed existing and projected traffic volumes and capacity for the Shiloh Road corridor. In response to additional development being proposed in the Shiloh Road corridor, projected traffic volumes were subsequently revised to reflect the changes in traffic volumes associated with this newly proposed development. The AADT for the project corridor is provided in Table 3.1. This includes traffic volume forecasts for the approximate opening period of 2007. Due to construction of other roadway facilities in the Billings area including Gabel Road (connects Zoo Drive to 32<sup>nd</sup> Street West) and the Zimmerman Trail, some traffic would shift from the Shiloh Road corridor, and these shifts in traffic are the reason that some of the AADT projections for 2007 are lower than existing conditions. By year 2027, traffic volumes on Shiloh Road, north of Zoo Drive, are predicted to increase between 26 and 54 percent over the 2007 traffic volumes depending on the location in the corridor. More detailed information is provided in the Traffic Report Technical Memorandum (document is available for review from MDT).

**Table 3.1 Average Annual Daily Traffic (AADT) on Shiloh Road**

Road Segment	2002 AADT	2007 AADT	2027 AADT
Canyon Creek Bridge – Zoo Drive	4,020	4,650	7,500
Zoo Drive – Hesper Road	11,420	10,700	31,300
Hesper Road – JTL/County Access	9,010	8,250	33,400
JTL/County Access – Montana Sapphire Drive	9,010	8,100	33,600
Montana Sapphire Drive – King Avenue	9,010	8,100	34,900
King Avenue – Monad Road	9,185	10,100	34,300
Monad Road – Central Avenue	10,375	11,900	38,100
Central Avenue – Howard Avenue	11,760	12,950	34,200
Howard Avenue – Broadwater Avenue	11,760	12,950	34,000
Broadwater Avenue – Yegen Property	11,640	12,700	32,000
Yegen Property – Grand Avenue	11,640	12,700	33,200
Grand Avenue – Poly Drive	9,670	11,030	23,900

Source: Engineering, Inc. Preliminary Traffic Report (July 2005), Engineering, Inc., October 2006 – personal communication

Traffic in the corridor is primarily cars and medium trucks, which account for 92 percent of the vehicles on the road (MDT, 2005 – Email Correspondence with Mr. Roy Peterson). The remaining eight percent is heavy truck traffic. Increases in traffic are anticipated to be the same mix of vehicles.

Traffic congestion experienced by drivers along a road facility is reported through LOS measurement. The Highway Capacity Manual (HCM) defines LOS as “a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is described using letter designations from A to F, with A being the most favorable operations condition and F being the worst.” The *Billings Urban Area 2005 Transportation Plan* specifies that the Billings urban area will achieve and maintain LOS C on all major roadways for the 20-year planning horizon, but that the City may have to “settle” for LOS D if the City determines that LOS C is cost prohibitive. MDT’s policy for intersections is that LOS B is the desired condition and LOS C is the minimum acceptable for design projects. The City of Billings requirement is that traffic operations at intersections must achieve an overall LOS C, which may mean that some specific movements could operate at less than LOS C.

The 2002 traffic volumes were analyzed at intersections in the project corridor under existing roadway conditions for pm peak hour traffic flows. As shown in Table 3.2, the existing condition in the project corridor currently provides an inadequate LOS at intersections with Hesper Road and Central Avenue.

## Impacts

### No Build Alternative

Intersection volume projections were calculated for pm peak hour traffic conditions for the future study years of 2007 and 2027. The projected LOS for pm peak hour conditions was then analyzed for the No Build Alternative, and Table 3.2 summarizes the results of the analysis. As previously described, due to construction of other roadway facilities in the Billings area including Gabel Road and the Zimmerman Trail, some traffic would shift from the Shiloh Road corridor, and these shifts in traffic are the reason that some of the LOS projections for 2007 are better than existing conditions. As shown in Table 3.2, under the No Build Alternative, all intersections in the study corridor are projected to operate at LOS E or F in 2027 without improvements. Under the No Build Alternative, traffic operations would be at congestion levels that do not meet policies outlined in the *Billings Urban Area 2005 Transportation Plan* and would not meet MDT design guidelines for LOS C as the minimum acceptable LOS. Travel time and average speed between Canyon Creek Bridge and Poly Drive in 2027 would be 45.0 minutes northbound (10 km/h [6.1 mph]) and 48.8 minutes southbound (9 km/h [5.6 mph]).

**Table 3.2 No Build Alternative - PM Peak Hour Intersection LOS**

Intersection	2002	2007	2027
Zoo Drive*	C	C	F
Hesper Road	F	E	F
King Avenue	C	B	F
Monad Road*	C	D	F
Central Avenue	F	B	F
Broadwater Avenue*	C	C	F
Grand Avenue	B	B	E

Source: Source: Engineering, Inc., October 2006 – personal communication

\*Two-way stop controlled intersections – LOS reported represents the most congested approach.

## Build Alternatives

Short-term impacts associated with construction are addressed in Section 3.5.

### Traffic Signals at Arterials Alternative

The projected LOS for pm peak hour conditions was analyzed assuming the proposed widening of Shiloh Road and the installation of traffic signals at the following intersections: Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, and Broadwater Avenue. The Grand Avenue intersection is already signalized, but would receive signal improvements. A temporary traffic signal was installed at Central Avenue in 2006 under a separate project. A permanent traffic signal would be constructed at this location under this alternative. This analysis also assumed appropriate auxiliary turn lanes at the intersections, and Table 3.3 summarizes the results of the analysis for the future study years of 2007 and 2027. As shown in Table 3.3, under the Traffic Signals at Arterials Alternative, all of the signalized intersections in the study corridor are projected to operate at LOS C or better in the design year of 2027. Travel time and average speed between Canyon Creek Bridge and Poly Drive in 2027 would be 9.3 minutes northbound (47 km/h [29.4 mph]) and 8.6 minutes southbound (51 km/h [31.7 mph]). Under this alternative, traffic would increase on Shiloh Road, but to a lesser degree than under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives. Side-streets entering and exiting Shiloh Road would carry more traffic than in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives. Because the corridor is expected to operate at LOS C, this alternative is consistent with the *Billings Urban Area 2005 Transportation Plan* and would meet MDT's minimum acceptable LOS.

**Table 3.3 Traffic Signals at Arterials Alternative - PM Peak Hour Intersection  
LOS (Without Coordinated Timing)**

Intersection	Proposed Improvements	2002	2007	2027
Zoo Drive	Geometric expansion; New traffic signal	C	B	C
Hesper Road	Geometric expansion; New traffic signal	F	A	B
King Avenue	Geometric expansion; Signal upgrades	C	B	C
Monad Road	Geometric expansion; New traffic signal	C	A	C
Central Avenue	Geometric expansion; New traffic signal	F	B	C
Broadwater Avenue	Geometric expansion; New traffic signal	C	A	C
Grand Avenue	Geometric expansion; Signal upgrades	B	B	C

Source: Source: Engineering, Inc., October 2006 – personal communication

### Roundabouts at Arterials Alternative

The projected LOS for pm peak hour conditions was analyzed assuming the proposed widening of Shiloh Road and the implementation of roundabouts at the following intersections: Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue. Table 3.4

summarizes the results of the traffic operations analysis at the intersections with proposed roundabouts for the future study years of 2007 and 2027.

As shown in Table 3.4, under the Roundabouts at Arterials Alternative, most of the roundabout intersections in the study corridor are projected to operate at LOS B in 2027. The roundabout intersection at Grand Avenue would operate at LOS C in 2027. Travel time and average speed between Canyon Creek Bridge and Poly Drive in 2027 would be 7.7 minutes northbound (56 km/h [34.5 mph]) and 7.7 minutes southbound (59 km/h [36.5 mph]). This alternative has the shortest travel time through the corridor. Similar to the Traffic Signals at Arterials Alternative, traffic would increase on Shiloh Road, but to a lesser degree than under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives. Side-streets entering and exiting Shiloh Road would carry more traffic than in the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives. Because the corridor is expected to operate at LOS C, this alternative is consistent with the *Billings Urban Area 2005 Transportation Plan* and would meet MDT's minimum acceptable LOS.

With the exception of the intersection at Zoo Drive and King Avenue, all of the proposed roundabout configurations include two travel lanes in each direction on Shiloh Road. The cross-streets at each of the intersections proposed for a roundabout include one or two lanes entering the roundabout depending on capacity requirements. For the Roundabouts at Arterials Alternative, the Zoo Drive intersection may include a slip lane, and the King Avenue intersection may include a semi-slip lane. A right-turn slip lane, as shown at the Zoo Drive roundabout intersection, is an exclusive right-turn lane that allows vehicles to bypass the intersection entirely without stopping or yielding. A semi-slip lane, as shown for the King Avenue intersection, is an exclusive right-turn lane requiring motorists to yield to circulating traffic without actually entering the circulating stream of traffic. The semi-slip lane shown for the King Avenue intersection also requires the right-turning traffic to merge with northbound traffic a short distance north of the intersection.

For Zoo Drive, there is only one through travel lane in each direction on Shiloh Road as this is the location where the roadway cross section transitions from four travel lanes to two travel lanes. Additionally, under the Roundabouts at Arterials Alternative, there may be a slip lane constructed for the westbound approach to accommodate the high volume of traffic heading north on Shiloh Road from Zoo Drive (refer to Figure 2.17).

In 2027, the roundabout configuration at King Avenue would include three travel lanes for the northbound and southbound approaches (refer to Figure 2.18). The inside lane would be used for left turns and u-turns while the two outer lanes would be used for through travel or right turns. The proposed configuration for the Roundabouts at Arterials Alternative at this intersection may also include a semi-slip lane on the westbound approach (refer to Figure 2.19). Initially the roundabout would be constructed with only two northbound and southbound travel lanes on Shiloh Road, and two eastbound and westbound travel lanes on King Avenue, but it would be built so that it could easily be modified to three lanes once they are needed.

**Table 3.4 Roundabouts at Arterials Alternative - PM Peak Hour Intersection  
LOS**

Intersection	Proposed Improvements	2002	2007*	2027*
Zoo Drive	Geometric expansion; New roundabout	C	B	B
Hesper Road	Geometric expansion; New roundabout	F	A	B
King Avenue	Geometric expansion; New roundabout	C	A	B
Monad Road	Geometric expansion; New roundabout	C	A	B
Central Avenue	Geometric expansion; New roundabout	F	A	B
Broadwater Avenue	Geometric expansion; New roundabout	C	A	B
Grand Avenue	Geometric expansion; New roundabout	B	A	C

Source: Source: Engineering, Inc., October 2006 – personal communication

\*Roundabout LOS based on results from RODEL software.

#### *Traffic Signals at Arterials and Major Development Alternative*

The projected LOS for pm peak hour conditions was analyzed assuming the proposed widening of Shiloh Road and the installation of traffic signals at the following intersections: Zoo Drive, Hesper Road, JTL/County access, Montana Sapphire Drive, King Avenue, Monad Road, Central Avenue, Howard Avenue, Broadwater Avenue, and Yegen property. The Grand Avenue intersection is already signalized, but would receive signal improvements under this alternative. A temporary traffic signal was installed at Central Avenue in 2006 under a separate project. A permanent traffic signal would be constructed at this location under this alternative. This analysis also assumed appropriate auxiliary turn lanes at the intersections, and Table 3.5 summarizes the results of the analysis for the future study years of 2007 and 2027. As shown in Table 3.5, under the Traffic Signals at Arterials and Major Development Alternative, all of the signalized intersections in the study corridor are projected to operate at LOS C or better in the design year of 2027. Travel time and average speed between Canyon Creek Bridge and Poly Drive in 2027 would be 10.2 minutes northbound (43 km/h [26.7 mph]) and 9.3 minutes southbound (47 km/h [29.4 mph]). For the build alternatives, this alternative has the longest travel time through the corridor. Under this alternative, traffic would increase on Shiloh Road, to a greater degree than under the Traffic Signals or Roundabouts at Arterials Alternatives. Side-streets entering and exiting Shiloh Road would carry less traffic than in the Traffic Signals or Roundabouts at Arterials Alternatives. Because the corridor is expected to operate at LOS C, this alternative is consistent with the *Billings Urban Area 2005 Transportation Plan* and would meet MDT's minimum acceptable LOS.

**Table 3.5 Traffic Signals at Arterials and Major Development Alternative - PM Peak Hour Intersection LOS (Coordinated Timing)**

Intersection	Proposed Improvements	2002	2007	2027
Zoo Drive	Geometric expansion; New traffic signal	C	A	C
Hesper Road	Geometric expansion; New traffic signal	F	A	B
JTL/County Access	Geometric expansion; New traffic signal	C	A	B
Montana Sapphire Drive	Geometric expansion; New traffic signal	C	A	B
King Avenue	Geometric expansion; Signal upgrades	C	A	C
Monad Road	Geometric expansion; New traffic signal	C	A	C
Central Avenue	Geometric expansion; New traffic signal	F	A	C
Howard Avenue	Geometric expansion; New traffic signal	N/A	A	A
Broadwater Avenue	Geometric expansion; New traffic signal	C	A	C
Yegen Property	Geometric expansion; New traffic signal	N/A	A	B
Grand Avenue	Geometric expansion; Signal upgrades	B	B	C

Source: Source: Engineering, Inc., October 2006 – personal communication

#### Roundabouts at Arterials and Major Development Alternative

The projected LOS for pm peak hour conditions was analyzed assuming the proposed widening of Shiloh Road and the implementation of roundabouts at the following intersections: Zoo Drive, Hesper Road, JTL/County access, Montana Sapphire Drive, King Avenue, Monad Road, Central Avenue, Howard Avenue, Broadwater Avenue, Yegen property, and Grand Avenue. Table 3.6 summarizes the results of the traffic operations analysis at the intersections with proposed roundabouts for the future study years of 2007 and 2027. As shown in Table 3.6, under the Roundabouts at Arterials and Major Development Alternative, all of the roundabout intersections in the study corridor are projected to operate at LOS B or better in the design year of 2027. Travel time and average speed between Canyon Creek Bridge and Poly Drive in 2027 would be 8.9 minutes northbound (50 km/h [30.8 mph]) and 9.8 minutes southbound (50 km/h [30.9 mph]). Similar to the Traffic Signals at Arterials and Major Development Alternative, traffic would increase on Shiloh Road, to a greater degree than under the Traffic Signals or Roundabouts at Arterials Alternatives. Side-streets entering and exiting Shiloh Road would carry less traffic than in the Traffic Signals or Roundabouts at Arterials Alternatives. Because the corridor is expected to operate at LOS C, this alternative is consistent with the *Billings Urban Area 2005 Transportation Plan* and would meet MDT's minimum acceptable LOS.

Similar to the Roundabouts at Arterials Alternative, with the exception of the intersection at Zoo Drive and King Avenue, all of the proposed roundabout configurations include two travel lanes in each direction on Shiloh Road. Because a full-access intersection would be provided at the JTL/County



access, a semi-slip lane at King Avenue would not be required because some traffic at the King Avenue intersection would use the JTL/County access intersection instead. Similar to the Roundabouts at Arterials Alternative, there may be a slip lane constructed for the westbound approach to accommodate the high volume of traffic heading north on Shiloh Road from Zoo Drive (refer to Figure 2.17).

**Table 3.6 Roundabouts at Arterials and Major Development Alternative - PM Peak Hour Intersection LOS**

Intersection	Proposed Improvements	2002	2007*	2027*
Zoo Drive	Geometric expansion; New roundabout	C	A	B
Hesper Road	Geometric expansion; New roundabout	F	A	B
JTL/County Access	Geometric expansion; New roundabout	C	A	B
Montana Sapphire Drive	Geometric expansion; New roundabout	C	A	B
King Avenue	Geometric expansion; New roundabout	C	A	B
Monad Road	Geometric expansion; New roundabout	C	A	B
Central Avenue	Geometric expansion; New roundabout	F	A	B
Howard Avenue	Geometric expansion; New roundabout	N/A	A	B
Broadwater Avenue	Geometric expansion; New roundabout	C	A	B
Yegen Property	Geometric expansion; New roundabout	N/A	A	B
Grand Avenue	Geometric expansion; New roundabout	B	A	B

Source: Engineering, Inc., October 2006 – personal communication

\*Roundabout LOS based on results from RODEL software.

## Mitigation

All of the build alternatives meet the project design criteria (refer to Section 2.1.1). There are no adverse traffic operations impacts that would result from any of the build alternatives. Therefore, mitigation would not be required.

### 3.2.2 Access

MDT initiated a statewide Access Management Project during the 1990s to strengthen the approach to access management in Montana. As documented in the Access Management Project Report (Dye, 1999), MDT considers it essential to operate streets and highways safely and efficiently by managing the access to and from abutting properties. The rights of property owners for reasonable access to streets and highways must be balanced with the rights of roadway users to have freedom of movement, safety, and efficient expenditure of public funds.

The Access Management Project Report identified distinct access classification areas with access guidelines specific to each classification. The majority of the Shiloh Road project corridor (Canyon Creek Bridge to Grand Avenue) falls into the Intermediate access category. According to the definition of Intermediate access category, these areas are those in transition from rural to urban land use and having between five and 25 accesses per mile. MDT has targeted these areas for access management to

preserve and enhance the performance and safety of the roadway network. The portion of the project corridor north of Grand Avenue is classified as a Developed Area. According to the definition of Developed Areas, these areas are identified as having limited amounts of vacant land and greater than 25 accesses per mile.

The Access Control Report for Phase 1 of the Shiloh Road Corridor Project documents existing access conditions in the project corridor and presents preliminary recommendations regarding future access management in the project corridor. The following section summarizes information from the Access Control Report, which is on file with MDT. The final Access Management Plan would be prepared during final design of this project.

## Existing Conditions

Currently, MDT functionally classifies Shiloh Road as a minor arterial from Canyon Creek Bridge to Grand Avenue and as a principal arterial from Grand Avenue to Poly Drive. However, the functional classification identified for Shiloh Road in the *Billings Urban Area 2005 Transportation Plan* is principal arterial (pending approval of the Montana Transportation Commission and the FHWA). Functional classification is a system by which roadways are distinguished by type according to their function within the entire transportation network. Principal arterial streets favor mobility functions over land access functions and are characterized by higher speeds, long distance continuity, and higher levels of service. Minor arterial streets are similar to principal arterial streets, but are distinguished by lower capacity and operating speeds. Collector streets collect traffic from local roads and carry it to arterial streets for longer distance travel.

Other City-classified principal arterials that intersect Shiloh Road within the project limits include Zoo Drive, King Avenue, Central Avenue, Broadwater Avenue, and Grand Avenue. Hesper Road is a City-classified minor arterial where it intersects with Shiloh Road, and Monad Road is a City-classified major arterial to east of Shiloh Road.

Shiloh Road currently has 92 accesses within the project limits including 85 existing accesses, five platted streets, and two dedicated City streets that have not yet been constructed. Public accesses, including City, County, or MDT roads, account for 33 of these accesses (east and west approaches to Shiloh Road counted separately) (Table 3.7). The remaining accesses on Shiloh Road are private and include residential, commercial, and agricultural accesses. In addition, side-streets intersecting with Shiloh Road in the project area also provide access points for parcels along those streets.

With the exception of commercial accesses near Grand Avenue, most access points in the corridor are unrestricted. Ingress and egress can occur via right and left turns. Most of these access points, both public and private, are not served by left-turn lanes. The only left-turn lanes that currently exist on Shiloh Road are located at the entrance to ZooMontana, the entrances to Faith Chapel, Broadwater Avenue, and Grand Avenue. The provision of full access without left-turn lanes increases the potential for rear-end crashes in the corridor. As discussed in Section 3.2.3, this type of crash accounted for 41 percent of the recorded crashes on Shiloh Road between January 1, 2001 and December 31, 2003.

**Table 3.7 Existing Access to Shiloh Road Between Canyon Creek and Poly Drive**

Access Type	Occurrences
<b>Public</b>	
City	23
County	8
MDT	2
<b>Private</b>	
Commercial	24
Residential	18
Commercial/Residential	1
Agricultural	16
<b>Total</b>	<b>92</b>

Source Engineering, Inc. (August 2006)

## Impacts

### **No Build Alternative**

Access to Shiloh Road would not change, and the corridor would not meet MDT guidelines for access management due to existing access spacing and configurations. All intersections are currently full access intersections on Shiloh Road, which creates inherent hazards on a two-lane roadway. These full access intersections interrupt through-mobility, cause safety, capacity, and speed issues, which are the goals of access management principles. Also, the existing access spacing is less than recommended. The Access Management Plan would not be implemented for this project and future accesses would be considered through the City and County platting and/or access permitting process, as applicable. Traffic congestion and safety issues, as identified in Sections 3.2.1 and 3.2.3, would persist and likely worsen as traffic volumes in the corridor increase.

### **Build Alternatives**

Under all of the build alternatives, the reconstruction of Shiloh Road offers the opportunity to address certain access concerns along the corridor through the reconstruction, consolidation, relocation, and elimination of existing access points as well as the control of future access along the corridor. Short-term impacts associated with construction are addressed in Section 3.5.

The preliminary recommended access management for Shiloh Road utilizes guidelines set forth in the Access Management Project Report (Dye 1999), City of Billings and Yellowstone County participation, and MDT standard practice, which would support the recommendation in the *Billings Urban Area 2005 Transportation Plan* that Shiloh Road serve as a principal arterial. The Transportation Plan states that principal arterials should “favor mobility functions over land access functions.” As such, managing access within the corridor is critical to achieving the need to improve transportation system linkage and enabling Shiloh Road to function as a primary north-south route in West Billings.

In addition to implementing access management along Shiloh Road, those principles may also be applied to streets crossing Shiloh Road in the corridor where accesses exist on parcels for which right-of-way is needed. The preliminary concepts for access management in the Shiloh Road corridor are described below for each build alternative. During final design, an Access Management Plan would be finalized for this project that would specify the type and location of accesses in the corridor. That management plan would be developed in coordination with the City of Billings and Yellowstone

County. After the Access Management Plan is finalized, it would be implemented by MDT in conjunction with an access control resolution approved by the Montana Transportation Commission.

The following are access management measures proposed for the Shiloh Road build alternatives (Table 3.8).

**Table 3.8 Proposed Access Management Measures**

Access Type	Access Management Measure
Public Streets	<ul style="list-style-type: none"> <li>Under the Traffic Signals or Roundabouts at Arterials Alternatives, provide full access via a controlled intersection at the following public streets: Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue. On opening day (anticipated in year 2010) signals would not be installed at Zoo Drive because traffic volumes in the near future do not warrant the need for a signal. Under the signal alternative, the Zoo Drive intersection would be constructed in 2010, but the signal poles and signal would not be installed. On opening day, roundabouts would be installed at all seven intersections under the roundabout alternative.</li> <li>Under Traffic Signals or Roundabouts at Arterials and Major Development Alternatives, provide full access via a controlled intersection at the following public streets: Zoo Drive, JTL/County access, Hesper Road, King Avenue, Monad Road, Central Avenue, Howard Avenue, Broadwater Avenue, and Grand Avenue.</li> <li>Provide full access via a two-way left-turn lane for public streets north of Colton Boulevard.</li> <li>Provide full access via median breaks and left turn bays at the following public streets: Pierce Parkway, Avenue B, Avenue C, and Parkhill Drive.</li> <li>Restrict access at the eight local public streets. Right-in and right-out movements only would be permitted at the following streets: Temple Place, Decathlon Parkway, Olympic Boulevard, Partridge Drive, and Bell Avenue.</li> <li>Howard Avenue (under the Traffic Signals at Arterials or Roundabouts Alternatives only), and Avenue D would be three-quarter accesses and would allow left-in, but not left-out movements, in addition to right-in and right-out movements.</li> </ul>
Private Accesses	<ul style="list-style-type: none"> <li>Private accesses south of Colton Boulevard would primarily be limited to right-in and right-out; however, left-turns would be provided where appropriate and would be determined during final design and included as part of the Access Management Plan developed for this project.</li> <li>Provide full access for private accesses north of Colton Boulevard via a two-way left-turn lane.</li> </ul>

### Traffic Signals at Arterials Alternative

The total number of existing, platted, and proposed accesses on Shiloh Road and side-streets within the project corridor would be reduced from 107 to 90 based on current access management recommendations. Two commercial accesses would be eliminated and four would be consolidated into two accesses. Four field accesses would be eliminated and two would be consolidated. One County access would be eliminated and two would be consolidated into one. One platted subdivision access would be eliminated. One church access would be eliminated and two would be consolidated into one. One residential/farm access would be eliminated and two would be consolidated into one.

The Access Management Plan would also restrict access to most properties in the project corridor to right-in and right-out through the use of a center median between Colton Boulevard and Pierce Parkway, and some accesses would be relocated to achieve the spacing guidelines outlined in the Access

Management Project Report (Dye 1999). Due to the proposed access restrictions, there would be out-of-direction travel for some users. Out-of-direction travel results when motorists are required to find an alternate means of negotiating their intended movement (e.g. left-turn from private access or left-turn from Shiloh Road) at an intersection due to the presence of limiting physical features such as raised median or from policy (e.g. limited access that is enforceable through regulatory signs) and therefore motorists have to travel further or out of their way to get to their intended destination.

Busy signalized intersections generally do not provide readily available u-turn provisions, and motorists may find it is better to travel through the intersection, find a means of turning around and return to the intersection for a through-movement in-lieu of the original u-turn. The motorist may also choose to use an alternate route and facility to get to their intended destination. Roundabouts provide for u-turns as a readily available intersection maneuver to those in the inside approach lane, and therefore limit the additional steps that were required for the busy signalized intersection.

These changes to access in the project corridor would improve safety and traffic flow for drivers and therefore benefit the traveling public. However, from Zoo Drive to Hesper Road signalized intersection access management under this alternative would not be consistent with the Access Management Guidelines for a Primary Route “divided” because the spacing between these signalized intersections would be less than the recommended 0.5 miles. This alternative is consistent with guidelines for unsignalized intersection spacing and median openings based on the site-specific conditions throughout the corridor. Refer to Table 2.1 for Recommended Access Guidelines.

Private approaches would be allowed to tie into the Monad Road and Broadwater Avenue signalized intersections as development necessitates the need; however, the impacts related to private development connecting into these intersections are not assessed in this environmental assessment and would need to be addressed in the future under a separate project. These access changes are preliminary and are subject to modification during final design based on site-specific conditions.

#### Roundabouts at Arterials Alternative

Access management impacts would be similar to Traffic Signals at Arterials Alternative. The proposed access changes under this alternative are similar to those for the Traffic Signals at Arterials Alternative except that roundabouts would be provided instead of traffic signals at the seven major intersections. The roundabouts would provide various benefits, with respect to access, as compared with the signalized intersections. For the properties along the corridor that would be restricted to right-in and right-out movements, the roundabouts would offer a more convenient way to make u-turns, thereby improving access for both travel directions on Shiloh Road for drivers. Additionally, large trucks that could not make u-turns at signalized intersections would be able to make u-turns at the roundabouts. This alternative would also impact fewer side-street accesses because its right-of-way impacts would not extend as far to the east and/or west for most of the major intersections.

Intersection access management under this alternative would also be inconsistent with the Access Management Guidelines for a Primary Route “divided” from Zoo Drive to Hesper Road because the spacing between these roundabouts would be less than the recommended 0.5 miles. This alternative is consistent with guidelines for unsignalized intersection spacing and median openings based on the site-specific conditions throughout the corridor. Refer to Table 2.1 for Recommended Access Guidelines.

A fourth leg for a future public approach would tie into both the Monad Road and Broadwater Avenue four-legged roundabouts as development necessitates the need; however, the impacts related to private development connecting into these roundabouts are not assessed in this environmental assessment and would need to be addressed in the future under a separate project. These access changes are preliminary and are subject to modification during final design based on site-specific conditions.

### *Traffic Signals at Arterials and Major Development Alternative*

The proposed access changes under this alternative are similar to the Traffic Signals at Arterials Alternative except that traffic signals would be provided at four additional locations when traffic warrants are met. These locations include the JTL/County access, Montana Sapphire Drive, Howard Avenue, and the Yegen property. Signalized intersection access management under this alternative would also not be consistent with the Access Management Guidelines for a Primary Route “divided.” The guidelines recommend minimum spacing for signals at 0.5 miles; however, several signals are being proposed at 0.25 mile intervals under this alternative. Compared to the Traffic Signals at Arterials Alternative, this alternative would be inconsistent in more locations. The JTL/County access and Montana Sapphire signalized intersections would be relocated in order to achieve the recommended spacing. The JTL/County access that is being proposed for a signalized intersection also provides access to Yellowstone County property. Access to this County property would be impacted by the relocation of the shared access. This alternative is consistent with guidelines for unsignalized intersection spacing and median openings based on the site-specific conditions throughout the corridor.

Private approaches would be allowed to tie into the JTL/County access, Montana Sapphire, Monad Road, Broadwater Avenue, and the Yegen property signalized intersections as development necessitates the need; however, the impacts related to private development connecting into these intersections are not assessed in this environmental assessment and would need to be addressed in the future under a separate project. These access changes are preliminary and are subject to modification during final design based on site-specific conditions. Similar to the Traffic Signals at Arterials Alternative, due to the center median and access restrictions, there would be out-of-direction travel for some users and traffic signals do not offer the same opportunities for u-turns as roundabouts.

### *Roundabouts at Arterials and Major Development Alternative*

The proposed access changes under this alternative are similar to the Roundabouts at Arterials Alternative except that roundabouts would be provided at three of the four additional locations when signal warrants are met. These locations include Montana Sapphire Drive, Howard Avenue, and the Yegen property. The JTL/County access would receive a roundabout without meeting signal warrants in order to provide full access to long trucks entering and exiting the site.

Intersection access management under this alternative would also be inconsistent with the Access Management Guidelines for a Primary Route “divided.” The guidelines recommend minimum spacing of 0.5 miles; however, several roundabouts are being proposed at 0.25 mile intervals under this alternative. Similar to the Traffic Signals at Arterials and Major Development Alternative, compared to the Roundabouts at Arterials Alternative, this alternative would be inconsistent in more locations. This alternative is consistent with guidelines for unsignalized intersection spacing and median openings based on the site-specific conditions throughout the corridor.

A fourth leg for a private approach would be allowed to tie into the four-legged roundabouts at the JTL/County access, Montana Sapphire, Monad Road, Broadwater Avenue, and the Yegen property as development necessitates the need; however, the impacts related to private development connecting into these roundabouts are not assessed in this environmental assessment and would need to be addressed in the future under a separate project. These access changes are preliminary and are subject to modification during final design based on site-specific conditions. Similar to the Roundabouts at Arterials Alternative, there would be less out-of-direction travel for users because of the improved opportunities to make u-turns at roundabouts.

## Mitigation

Access closures and relocations will be coordinated with affected property owners during final design to minimize impacts to residences as well as agricultural and business operations.

Additional median breaks and provisions for left-in turns will be assessed during final design to reduce out of direction travel resulting from the implementation of medians.

### 3.2.3 Safety

As highlighted in Section 1.0, improving safety is one of the primary purposes of this project. Crash analyses on this corridor show a high number of crashes and have identified crash clusters. In 1994, MDT implemented safety improvements at the intersection of Hesper Road and Shiloh Road including flashers, signs, and pavement markings. In 1997, MDT implemented similar improvements at the intersections with Broadwater Avenue and King Avenue. In 1997, the intersection with Central Avenue was identified as a crash cluster location, but no feasible countermeasures to address specific crash trends were identified. A temporary traffic signal was installed at Central Avenue in 2006 under a separate project. Monad Road intersection has been identified as eligible for safety funding due to the frequency and type of crashes there, and a southbound left-turn lane is scheduled to be constructed in 2007.

Several crash analyses have been performed on this corridor in the last decade which indicates safety concerns at the major intersections. MDT performed a crash analysis for the period of January 1, 1996 to December 31, 2000 (prior to the Zoo Drive connection to the I-90 interchange). During this time period, 88 crashes were recorded (MDT PFRR, 2001). The majority of these crashes were two or three vehicle collisions at one of the major intersections. Concentrations of crashes occurred at the intersections with Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue.

Subsequently, crash statistics for the corridor were also collected for a three-year period between January 1, 2001 and December 31, 2003. Tables 3.9 and 3.10 summarize the location of crashes throughout the study corridor occurring during this time period.

**Table 3.9 Intersection Crashes**

Intersection	Number of Crashes	Crash Rate (crashes / million vehicles entering intersection)
Zoo Drive	5	0.79
Hesper Road	12	0.88
King Avenue	11	0.61
Monad Road	11	0.91
Central Avenue	10	0.53
Broadwater Avenue	11	0.77
Grand Avenue	15	0.79
Poly Drive	2	Not calculated
Other Minor Intersections	13	Not calculated
<b>Total</b>	<b>90</b>	<b>N/A</b>

Source: Preliminary Traffic Analysis, Engineering, Inc. (July 2005)

**Table 3.10 Non-Intersection Crashes**

Roadway Segment	Number of Crashes	Crash Rate (crashes / million miles traveled)
Canyon Creek to Zoo Drive	0	0.0
Zoo Drive to Hesper Road	3	0.51
Hesper Road to King Avenue	3	0.30
King Avenue to Monad Road	1	0.20
Monad Road to Central Avenue	4	0.70
Central Avenue to Broadwater Avenue	4	0.62
Broadwater Avenue to Grand Avenue	3	0.47
Grand Avenue to Poly Drive	4	0.54
	<b>Total - 22</b>	<b>Average = 0.46</b>

Source: Preliminary Traffic Analysis, Engineering, Inc. (July 2005)

There were 112 recorded crashes on Shiloh Road within the project limits during this three year time period. The number of crashes on Shiloh Road increased each year between 2001 and 2003 primarily due to increasing traffic volumes in the corridor. Crashes in the project corridor increased by seven percent between 2001 and 2002, and by more than ten percent between 2002 and 2003. Table 3.11 shows a summary of the type of crashes that occurred in the project corridor.

**Table 3.11 Crash Summary (1/1/2001 – 12/31/2003)**

Crash Location	Number of Crashes	Crash Characteristics
Intersection Related Crashes	<ul style="list-style-type: none"> <li>• 90 total</li> <li>• 48 with injuries</li> <li>• 0 with fatalities</li> </ul>	<ul style="list-style-type: none"> <li>• 41 were rear-end collisions</li> <li>• 32 were right-angle collisions</li> <li>• 3 drivers lost control of their vehicles</li> <li>• 5 involved left turns</li> <li>• 3 involved right turns</li> <li>• 2 were head on collisions</li> <li>• 1 resulted in an overturned vehicle</li> <li>• 2 were side-swipe</li> <li>• 1 was coded "other"</li> </ul>
Non-intersection Related Crashes	<ul style="list-style-type: none"> <li>• 22 total</li> <li>• 12 with injuries</li> <li>• 0 with fatalities</li> </ul>	<ul style="list-style-type: none"> <li>• 5 were rear-end collisions</li> <li>• 1 was a right-angle collision</li> <li>• 12 drivers lost control of their vehicles</li> <li>• 1 was a side-swipe</li> <li>• 1 involved a deer</li> <li>• 2 were classified as "unknown"</li> </ul>

Source: Preliminary Traffic Analysis, Engineering, Inc. (July 2005)

Most crashes were at major intersections and involved rear-end and right-angle collisions. Although 22 crashes were reported as non-intersection related, many of those occurred in proximity to intersections as motorists approached various intersections in the Shiloh Road corridor.



## Impacts

### **No Build Alternative**

None of the safety issues in the project corridor would be addressed. The number of crashes would likely continue to increase as traffic volumes in the corridor increase.

### **Build Alternatives**

#### Traffic Signals at Arterials Alternative

The Traffic Signals at Arterials Alternative would be anticipated to improve safety and provide an opportunity to decrease crash rates by improving roadway and intersection deficiencies and controlling access to the corridor.

The proposed intersection improvements at Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue, as discussed in Section 2.2.4, would help to reduce intersection related crash rates by providing signalized intersection control and auxiliary lanes. These improvements would address rear-end and right-angle crashes, which account for 81 percent of intersection related crashes and 71 percent of all crashes recorded in the project corridor.

The proposed roadway improvements throughout the corridor, as discussed in Section 2.2.2, would be anticipated to help reduce corridor crash rates by controlling access from adjacent properties, separating opposing travel movements at intersections, separating opposing vehicles between intersections, improving the condition of the aging roadway, and improving the clear zone adjacent to the roadway. Under this alternative, drivers would continue to be familiar with the use of signalized intersections.

#### Roundabouts at Arterials Alternative

The Roundabouts at Arterials Alternative would be anticipated to provide similar safety benefits to the Traffic Signals at Arterials Alternative, except at the intersections. The anticipated safety benefits in the corridor would be essentially the same, but the anticipated safety improvement at intersections would be greater than the existing conditions or the signalized alternative. Roundabouts offer the potential for greater safety improvement than signalized intersections, because the potential for conflict between vehicles traveling in opposite directions is removed and vehicles are forced to reduce speed at the intersection. This not only reduces the number of crashes, but also the severity of the crashes. According to the Insurance Institute for Highway Safety, modern roundabouts reduce motor vehicle crashes. Their July 2001 Status Report noted “most serious kinds of crashes at conventional intersections are virtually eliminated by roundabouts...Crashes that do occur tend to be minor because traffic speeds are slower.” As discussed in Section 2.2.4, the Montana legislature has encouraged the construction of roundabouts over signalized intersections due to demonstrated safety benefits.

Due to the potential lack of driver familiarity with roundabouts, there may initially be some driver confusion about how to use a roundabout.

#### Traffic Signals at Arterials and Major Development Alternative

The Traffic Signals at Arterials and Major Development Alternative would be anticipated to provide the same safety benefits as the Traffic Signals at Arterials Alternative.

### Roundabouts at Arterials and Major Development Alternative

The Roundabouts at Arterials and Major Development Alternative would be anticipated to provide the same safety benefits as the Roundabouts at Arterials Alternative.

### **Mitigation**

For the Roundabouts at Arterials Alternative and Roundabouts at Arterials and Major Development Alternative, MDT will incorporate a public information program describing roundabouts and their operations that would include a Web site providing information to help the public understand how to maneuver through these circular flowing intersections. The site provides basic information regarding roundabouts, including why MDT wants to utilize roundabouts, and how pedestrians, bicyclists, and motorists can safely maneuver through them. MDT public information program may also include informational brochures to be placed at the Airport, Chamber of Commerce and Visitor's Center, local businesses, and area hotels. These measures will help to improve drivers' understanding of modern roundabouts.

### **3.2.4 Transit**

City of Billings Metropolitan Transit (MET) currently has three routes that provide bus service near Shiloh Road, but no bus service is currently provided on Shiloh Road. Route 13D approaches Shiloh Road from the east on King Avenue, cuts through the Olympic Park Subdivision to Monad Road where the route heads east again. Route 7D approaches Shiloh Road from the east on Broadwater Avenue and services the Montana State University (MSU) Billings Campus before heading east again. Route 2P approaches Shiloh Road from the east on Rimrock Road and services St. John's Home (assisted living complex) before proceeding south on 38<sup>th</sup> Street West to Poly Drive where the route heads east again. Because Shiloh Road is not entirely within the City of Billings, MET currently has no plans to provide bus service on the corridor or provide bus service across the corridor.

### **Impacts**

#### ***No Build Alternative***

The No Build Alternative would have no impacts to the existing transit routes near the corridor. If future transit routes are provided on or across Shiloh Road, traffic congestion could impede these routes during peak traffic hours.

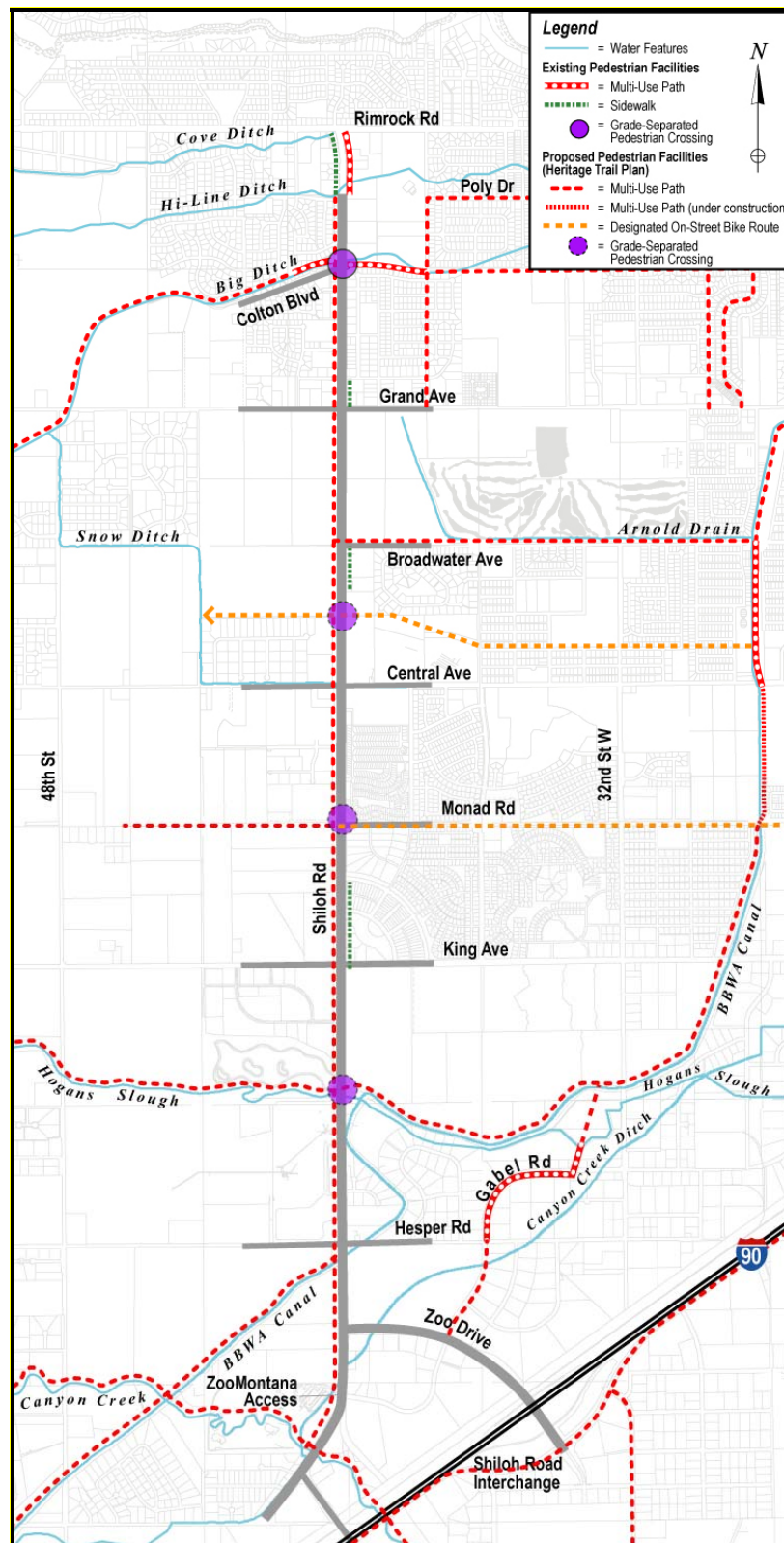
#### ***Build Alternatives***

None of the build alternatives would have adverse impacts on existing transit routes near the corridor. Potential future transit routes on or across Shiloh Road would benefit from improved traffic flow under all of the build alternatives.

### **3.2.5 Pedestrians & Bicycles**

The project corridor currently has five formal pedestrian facilities including four segments of sidewalk and one multi-use path within the project limits (see Figure 3.1 and Table 3.12). The multi-use path crosses Shiloh Road near Colton Boulevard via one of only two grade-separated pedestrian crossings in Billings. A City project that was recently completed just north of the project limits included sidewalk and a multi-use path between Poly Drive and Rimrock Road. Throughout the remainder of the corridor, there are no multi-use paths or sidewalks and the shoulders are narrow or non-existent. In addition, some shoulder areas are unpaved. These conditions require pedestrians and cyclists to either share travel lanes with vehicles or travel on uneven and potentially hazardous surfaces.

**Figure 3.1 Existing and Proposed Pedestrian/Bicycle Facilities in the Project Area**



Source: City of Billings and Engineering, Inc.

**Table 3.12 Existing Pedestrian/Bicycle Facilities Within the Project Limits**

Shiloh Road Segment	Existing Pedestrian/Bicycle Facilities
Canyon Creek Bridge – King Avenue	<ul style="list-style-type: none"> <li>• none</li> </ul>
King Avenue – Monad Road	<ul style="list-style-type: none"> <li>• 460 m (1,500 ft) of sidewalk on the east side of Shiloh Road between King Avenue and Decathlon Parkway</li> </ul>
Monad Road – Central Avenue	<ul style="list-style-type: none"> <li>• none</li> </ul>
Central Avenue – Broadwater Avenue	<ul style="list-style-type: none"> <li>• 180 m (590 ft) of sidewalk along the east side of Shiloh Road just south of the Broadwater Avenue intersection</li> </ul>
Broadwater Avenue – Grand Avenue	<ul style="list-style-type: none"> <li>• none</li> </ul>
Grand Avenue – Poly Drive	<ul style="list-style-type: none"> <li>• Big Ditch Trail: east-west multi-use path that crosses Shiloh Road via an underpass near Colton Boulevard along the Big Ditch</li> <li>• 150 m (492 ft) of sidewalk on each side of Shiloh between Avenue B and Grand Avenue</li> </ul>

Source: Engineering, Inc.

The *Heritage Trail Plan* was adopted by the City of Billings and Yellowstone County in May/June 2004. The *Heritage Trail Plan* is the non-motorized transportation element of the *Billings Urban Area 2005 Transportation Plan*, which provides support to development of bicycle and pedestrian facilities through many of its stated Community Transportation Guiding Principles. These principles focus on the need to provide a balanced transportation system that recognizes the needs of a variety of transportation modes. The Transportation Plan states that:

*The City will implement the BikeNet program, encourage bicycling as a viable alternative to automobile use for all trip purposes, and ensure safe and convenient facilities with good access to residential neighborhoods and major activity centers.*

The *Heritage Trail Plan* proposes a multi-use path along the west side of Shiloh Road from Canyon Creek to Rimrock Road. This proposed path is not identified as a priority project, but three priority projects were proposed to connect to Shiloh Road. One of these, the Big Ditch Trail, has been constructed under Shiloh Road (grade-separated underpass) and to the east of Shiloh Road. The continuation of the trail to the west of Shiloh Road will be constructed in 2006 by the City. The other two priority projects include the Monad Road on-street primary bikeway and the BBWA West End multi-use path. Two additional multi-use paths are proposed to cross Shiloh Road at Canyon Creek and Howard Avenue (north end of Clydesdale Park between Central Avenue and Broadwater Avenue).

The *Heritage Trail Plan* also proposes grade-separated pedestrian crossings at the proposed Monad Road bikeway and the proposed BBWA West End multi-use path. A third grade-separated crossing is proposed for a secondary bikeway that traverses the MSU Billings College of Technology campus and crosses Shiloh Road at Howard Avenue. The proposed pedestrian facilities from the *Heritage Trail Plan* within the project area are shown in Figure 3.1.

## Impacts

### **No Build Alternative**

No additional pedestrian or bicycle improvements would be implemented and therefore, there would be no opportunity to improve the pedestrian and bicycle conditions in this corridor.

## ***Build Alternatives***

Short-term impacts associated with construction are addressed in Section 3.5.

### ***Traffic Signals at Arterials Alternative***

This alternative would improve both pedestrian and bicycle safety by providing sidewalks and multi-use path facilities throughout the project corridor (refer to Figure 2.14). A 3-m (10-ft) wide multi-use path is proposed along the west side of Shiloh Road from the ZooMontana entrance north to Colton Boulevard. A 1.6-m (5-ft) wide sidewalk is proposed along the east side of Shiloh Road beginning across from the entrance to ZooMontana north to Colton Boulevard. At this location, the multi-use path and the sidewalk would access the existing pedestrian underpass at the Big Ditch Trail and switch to the opposite sides of Shiloh Road to connect with the existing multi-use path and sidewalk facilities that continue north along Shiloh Road. The proposed multi-use path and sidewalk would improve conditions for pedestrians and bicyclists by providing dedicated areas for these types of users to travel north and south along Shiloh Road.

The alignment of the proposed multi-use path along Shiloh Road would transition through the crosswalks at the signalized intersections smoothly at Hesper Road and Grand Avenue. At King Avenue, Monad Road, and Central Avenue, the multi-use path alignment is on the west side of the Shiloh Drain. Therefore, the path would need to swerve back in toward Shiloh Road at these intersections to align with the crosswalks at the signalized intersections. The multi-use path alignment is also moved near the Broadwater Avenue intersection due to the presence of a residential structure near the southwest corner of the intersection.

At each of the seven major intersections in the project corridor (Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue) where signalized intersection improvements are proposed, a crosswalk with pedestrian signals would be provided on both sides of Shiloh Road and both sides of the intersecting road. Drivers would be required to yield to pedestrians. The pedestrian signals would offer “protected” crossing times. Signalized intersections offer explicit, positive guidance to pedestrians by way of visual and audible pedestrian indications. Thus, the decision process for visually impaired and other pedestrians may be easier at signalized intersections as compared to roundabouts or the existing conditions in the corridor.

This alternative would provide an at-grade crossing for pedestrian and bicyclists near one of the three locations identified in the *Heritage Trail Plan*, the proposed Monad Road primary bikeway. See Section 2.4.3 for a discussion on why a grade-separated crossing was not provided at these locations. No new at-grade pedestrian/bicycle crossings would be provided near the proposed Hogan’s Slough multi-use path and the proposed secondary bikeway at Howard Avenue because these trails do not exist today, and there are no proposed intersections near these locations.

The intersections are designed with a larger turning radius than is required according to MDT standards in order to accommodate WB-20LM trucks. The Best Practices Design Guide, Designing Sidewalks and Trails for Access (Kirschbaum et al. 2001) states that pedestrian access is compromised at intersections with larger turning radii. Crossing distances are longer and vehicles can take turns at higher speeds.

Overall, pedestrian and bicycle conditions under this alternative would be improved over existing conditions because of providing facilities dedicated to pedestrians and bicyclists along Shiloh Road and improved pedestrian and bicycle safety at the seven intersections being signalized.

### Roundabouts at Arterials Alternative

The multi-use path and sidewalks being provided adjacent to Shiloh Road under this alternative would be the same as the Traffic Signals at Arterials Alternative. However, at the seven major intersections (Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue) where roundabouts are proposed, the type of pedestrian facilities would be different than the signalized alternative. This is primarily a result of the difference in how signals and roundabouts control vehicular and pedestrian traffic.

The roundabout design would provide crosswalks at all of the approaches, but pedestrian signals, as are typical at signalized intersections, would not be provided, unless current requirements change. As opposed to signalized traffic control, all vehicles are slowed at the approach to a roundabout and must yield to vehicles in the roundabout and pedestrians in the crosswalks. As such, roundabouts do not offer a “protected” time for pedestrians to cross, but pedestrians always have the right-of-way in the crosswalk.

Similar to the signalized intersections, the alignment of the multi-use path with the crosswalks at the roundabouts would not always provide a smooth transition. The crosswalk facilities at roundabouts are set back from the roundabout as shown in Figures 2.16 – 2.19. For this reason, the alignment of the proposed multi-use path along Shiloh Road would transition through the crosswalks at the roundabouts smoothly when the path is on the west side of the Shiloh Drain (at King Avenue, Monad Road, and Central Avenue). For this same reason, the multi-use path alignment at Hesper Road and Grand Avenue would need to swerve slightly to the west to connect with the crosswalks at those intersections. The multi-use path alignment is also moved near the Broadwater Avenue intersection due to the presence of a residential structure near the southwest corner of the intersection.

Similar to the Traffic Signal at Arterials Alternative, this alternative would provide an at-grade crossing for pedestrians and bicyclists near one of the three locations identified in the *Heritage Trail Plan*, the proposed Monad Road primary bikeway. See Section 2.4.3 for a discussion on why a grade-separated crossing was not provided at these locations. No new at-grade pedestrian/bicycle crossings would be provided near the proposed Hogan’s Slough multi-use path and the proposed secondary bikeway at Howard Avenue because these trails do not exist today, and there are no proposed intersections near these locations.

Roundabouts do offer some safety benefits different than signalized intersections. The roundabout design would provide a pedestrian refuge area in the raised median that separates opposing lanes of traffic (refer to Figures 2.16 – 2.19 in Section 2.2.4). This would enable pedestrians to focus on only one direction of traffic at a time when crossing vehicular travel lanes. Another difference with roundabouts is that they generally have lower vehicle approach speeds. Also, the reduced number of approach lanes can decrease the crossing distance of the roundabouts as compared with signalized intersections. Despite the high level of pedestrian safety at roundabouts (based on international and limited U.S. experience), many pedestrians do not perceive roundabouts to be safe (Stone et al. 2002).

The primary disadvantage of roundabouts with respect to pedestrian safety is the lack of cues for pedestrians with visual impairments and cognitive disabilities. At signalized intersections, visually impaired pedestrians can hear traffic stopping and starting and receive cues that allow pedestrians a designated time to cross. At roundabouts, entries are yield controlled, so there would not be audible starting and stopping of traffic, and there would not be a traffic signal (under current requirements) that would require traffic to stop for a prolonged period of time to allow pedestrians to cross. Another challenging factor for the visually impaired is that vehicles exiting the roundabout may sound much like cars circulating the roundabout (Kirschbaum et al. 2001).

Overall, pedestrian and bicycle conditions under this alternative would be improved over existing conditions because of providing facilities dedicated to pedestrians and bicyclists along Shiloh Road and improved safety conditions provided by the seven roundabout intersections.

#### *Traffic Signals at Arterials and Major Development Alternative*

The multi-use path and sidewalks being provided adjacent to Shiloh Road under this alternative would be the same as the Traffic Signals at Arterials Alternative. However, four additional intersections (JTL/County access, Montana Sapphire Drive, Howard Avenue, and Yegen property) would be signalized and therefore would have pedestrian facilities provided at these signalized intersections. These four signalized intersections provide additional pedestrian and bike opportunities for east-west crossings on Shiloh Road. This alternative also provides more safety benefits than either of the roundabout alternatives due to the inherent pedestrian safety benefits of traffic signals over roundabouts. This alternative would provide an at-grade crossing for pedestrians and bicyclists near all of the three locations identified in the *Heritage Trail Plan*, the proposed Monad Road bikeway, proposed Hogan's Slough multi-use path (at JTL/County access), and the proposed secondary bikeway at Howard Avenue. Refer to Section 2.4.3 for a discussion on why grade-separated crossings were not provided at these locations.

#### *Roundabouts at Arterials and Major Development Alternative*

The multi-use path and sidewalks being provided adjacent to Shiloh Road under this alternative would be the same as the Traffic Signals at Arterials Alternative. However, four additional intersections (JTL/County access, Montana Sapphire Drive, Howard Avenue, and Yegen property) would have roundabouts constructed and therefore would have pedestrian facilities provided at these new roundabouts. These four roundabouts provide additional pedestrian and bike opportunities for east-west crossings on Shiloh Road. Overall pedestrian and bicycle conditions under this alternative would be improved over existing conditions because of providing facilities dedicated to pedestrians and bicyclists along Shiloh Road and improved safety conditions at the eleven roundabout intersections. However, due to the disadvantages associated with roundabouts described above, this alternative offers less safety benefit than the Traffic Signals at Arterials and Major Development Alternative. Similar to the Traffic Signals at Arterials and Major Development, this alternative would provide an at-grade crossing for pedestrians and bicyclists near all of the three locations identified in the *Heritage Trail Plan*, the proposed Monad Road bikeway, proposed Hogan's Slough multi-use path (at JTL/County access), and proposed secondary bikeway at Howard Avenue. Refer to Section 2.4.3 for a discussion on why grade-separated crossings were not provided at these locations.

### **Mitigation**

Where practicable, the length of pedestrian crossings at signalized intersections will be reduced. Although the turning radii at intersections are large to accommodate WB-LM20 trucks, they were designed with the assumption that trucks will use both exit lanes (when available) to make right-turns. This allows the width of the pedestrian crossing to be reduced. If trucks were not allowed to use both lanes, the turning radii would be larger than is proposed at most intersections.

See Section 3.2.3 for mitigation on roundabout operations.

### **3.3 EFFECTS ON THE COMMUNITY**

This section describes existing social and economic conditions in the Shiloh Road corridor between the Canyon Creek Bridge (RP 4.75) and Poly Drive (RP 0.25).

### 3.3.1 Community Resources

#### County/City Characteristics

Based on information presented in the *Yellowstone County and City of Billings 2003 Growth Policy Plan*, Yellowstone County has increased in population steadily over the decades since its formation in 1883. The County is the most populous in Montana with a 2000 population of 129,352. Close to 70 percent of the County's population lives in the county seat of Billings. Other population centers include Laurel, Lockwood, Custer, Shepherd, Huntley, Worden, Ballentine, Pompey's Pillar, and Broadview. Over the years, the percentage of the County population living in rural parts of the County has gradually shifted into the urban areas. In 1980 approximately 66 percent of the population lived in an urban area, and by 1990 over 76 percent of the population was living in an urban area. This trend changed between 1990 and 2000, when the percent of urban population actually decreased, as the City of Billings lost population in its core neighborhoods to rural development outside the city limits.

Of the 26 Census Tracts in Yellowstone County, the five with the highest percent growth between 1990 and 2000 were associated with the City of Billings. Four represented growth in West Billings and one represented growth in the Heights area (*2003 Growth Policy Plan*). According to the *Billings Urban Area 2005 Transportation Plan*, growth in the area surrounding the project corridor has been on the rise since 1970 and is projected to continue. Between 1980 and 2000 the two neighborhoods bordering Shiloh Road on the east (Billings NW and the West End) comprised 39 percent of the growth in Billings, while growth in the neighborhoods west of the project (Shiloh Northwest and Shiloh West) comprised 20 percent of total growth in Billings (see Figure 3.2). Population forecasts in the Transportation Plan for the period of 2002 to 2027 indicate that the Shiloh West and Shiloh Northwest neighborhoods are expected to experience population increases of 184 percent and 354 percent respectively.

In the Summer of 2001, the City and County adopted the *West Billings Plan* in response to community concerns about sprawling and unplanned development in West Billings. The plan outlines policies for the pattern and character of future development in West Billings, and in particular the Shiloh Road corridor. Shiloh Road was designated as a Community Entryway Corridor and the City and County have subsequently drafted an overlay zoning district to regulate development in the corridor.

#### Schools

According to the Yellowstone County School District, three school districts lie within the project area: Billings Public School System (District #2) and two county school districts (#4 and #23). Figure 3.3 shows the school districts, schools, and areas of attendance for elementary, middle, and high schools.

According to the Billings Public School Transportation Department, approximately four school bus stops, all located between Rimrock Road and Grand Avenue, currently exist on Shiloh Road. In addition, there are stops in the Shiloh Estates subdivision along the west side of Shiloh Road between Central Avenue and Broadwater Avenue. Approximately eight of the eleven bus routes that serve School District #2 currently run along or cross Shiloh Road at some point. Because the number and routes of school buses change regularly in response to students' residential locations, they are difficult to accurately identify. Therefore, this section documents the areas of attendance to determine which portions of the corridor might be used by school buses, parents, or students traveling to and from school.

As shown in Figure 3.3, there are eight areas of elementary school attendance, five areas of middle school attendance, and two areas of high school attendance in the project area. Of these, the attendance areas of three elementary schools, two middle schools, and one high school are likely to generate traffic along or across Shiloh Road. Four private schools and two institutes of higher learning also exist near the project area (see Figure 3.3). Students attending these schools could reside anywhere in the city or



**Figure 3.2 Neighborhood Map of the Project Area**

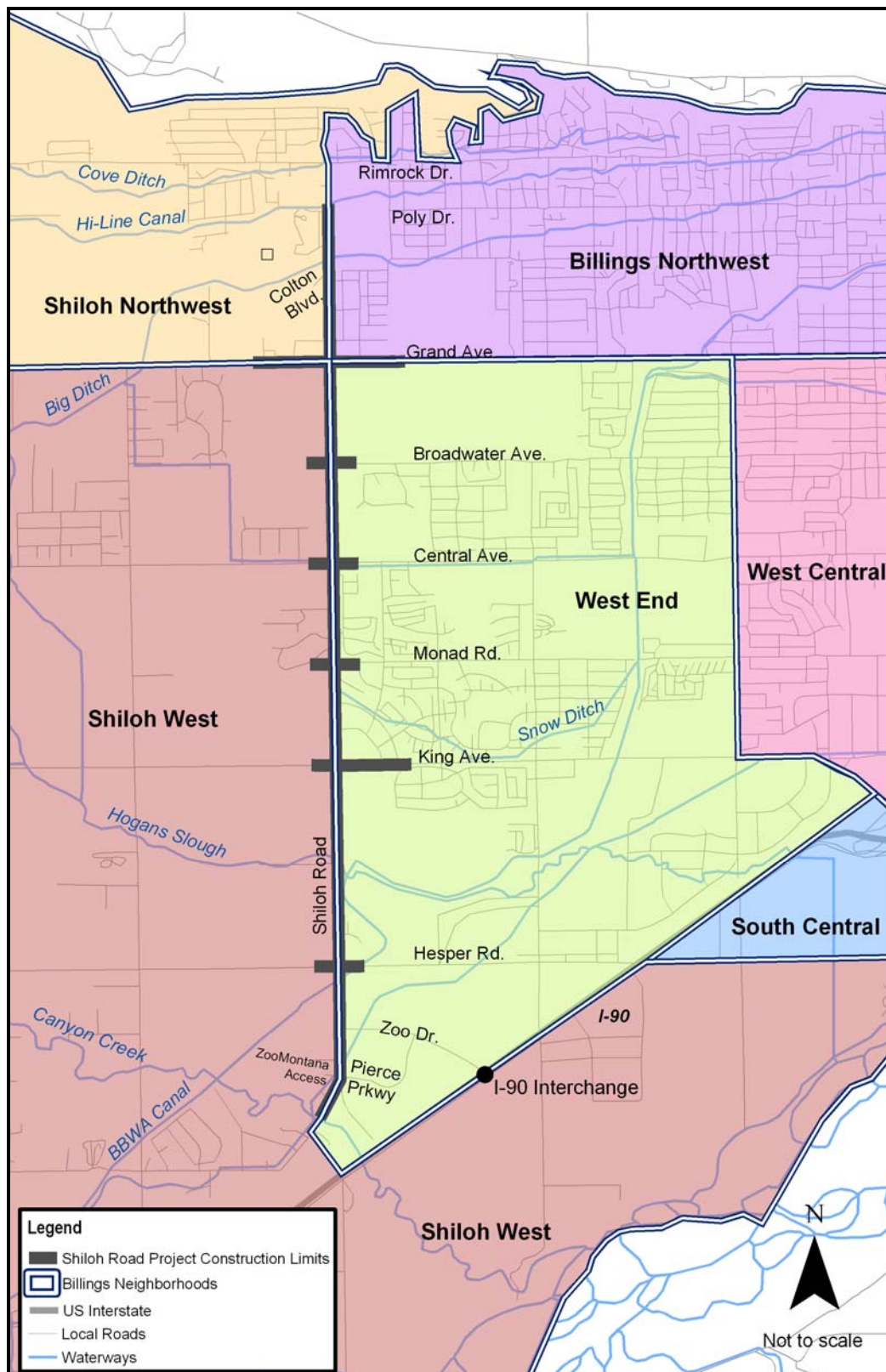
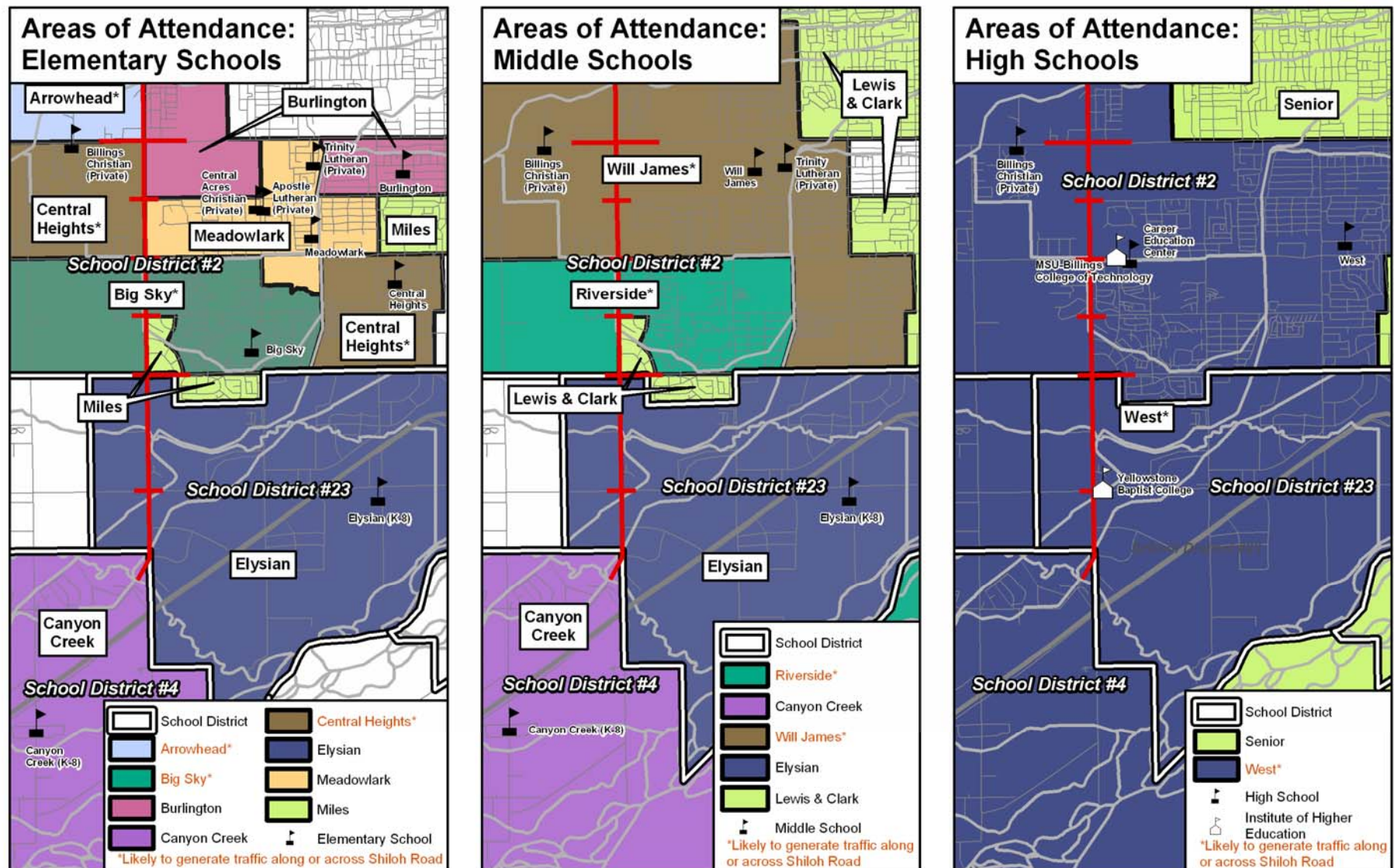


Figure 3.3 School Districts and Areas of Attendance in the Project Area



Source: Yellowstone County School District

county, therefore it is unknown whether or not Shiloh Road might be part of their route to and from school.

### Churches/Synagogues

There are four churches located along Shiloh Road within the project area. New Life Church is located on the east side of Shiloh Road north of Hesper Road. The Emmanuel Baptist Church is located on the west side of Shiloh Road between Central Avenue and Monad Road. Faith Chapel has a large complex on the east side of Shiloh Road south of Broadwater Avenue. The Sunday service at Faith Chapel currently draws approximately 1,000 vehicles, and this number is likely to increase substantially once the facility completes an expansion planned to occur between 2006 and 2009. Shiloh United Methodist Church is located on the west side of Shiloh Road opposite from Avenue D (see Environmental Overview Maps in Appendix A).

### Emergency Services

The City of Billings provides police, fire, and ambulance dispatch for the City of Billings as well as contracted areas within a four-mile radius of the city limits. The Billings Fire Department has six stations, of which #3 and #5 service the project area. The Billings Police Department was recently restructured into two districts and Shiloh Road lies within both districts.

### Hospitals

There are two hospitals in Billings: the Billings Clinic and St. Vincent Healthcare. Both hospitals are level II trauma centers located in downtown Billings. St. Vincent Healthcare owns the parcel between King Avenue and Monad Road on the west side of Shiloh Road and has planned a mixed-use development that will include a medical campus with commercial uses along Shiloh Road. The Billings Clinic also owns a parcel on the west side of Shiloh Road between Broadwater Avenue and Howard Avenue and has plans for a medical campus and mixed-use development.

### Parks and Recreational Facilities

There are 847 parks in Yellowstone County. The vast majority of these are in Billings. The Billings Park and Recreation system consists of 2,592 acres of park land with recreation facilities throughout the City.

The following park master planning documents contain information and guidance on parks in the study area: *Parks2020 - The Billings Parks, Recreation and Open Space Master Plan and Summary*, *Heritage Trail Plan*, *City and County Growth Plan*, and *West Billings Plan*. The Yellowstone County Geographic Information System (GIS) Web site was also used to identify park system land in the study area. There are designated City-owned park parcels in the project area including:

- Ann Ross Park - west side of Shiloh Road between King Avenue and Monad Road
- Olympic Subdivision Park - east side of Shiloh Road between King Avenue and Monad Road
- Rush Subdivision Park - west side of Shiloh Road south of Park Hill Drive
- Circle 50 Subdivision Park – east side of Shiloh Road at Colton Boulevard (at Big Ditch Trail)
- Missions United Subdivision Park – east side of Shiloh Road at Colton Boulevard (at Big Ditch Trail)

These city park parcels were identified on the Yellowstone County GIS Web site; however, only the Olympic Subdivision Park is identified in the *Parks2020 Plan*. The plan classifies Olympic Subdivision Park as Urban Green Space, and specifies the following: “Priority green space will be provided in parks located at gateways to the community, along major transportation corridors, and at “edges of neighborhoods.” Ann Ross Park, Rush Subdivision Park, Circle 50 Subdivision Park, and Missions United Subdivision Park were not identified in any of the city master planning documents.

There are two areas of County park system land in the project area: Sharptail and Clydesdale Parks. Sharptail is identified in the *Parks2020 Plan*, the *West Billings Plan*, and the *City and County Growth Plan*. The *Growth Plan* identifies Sharptail as park land that is currently being leased for other purposes. The *West Billings Plan* and the *Parks2020 Plan* identify Sharptail as a planned 53-acre park that “should be developed as a recreational complex that would also serve as a neighborhood cultural and educational center.”

Clydesdale Park is identified in the *Yellowstone County Comprehensive Parks Plan*, the *Parks2020 Plan*, and the *Growth Plan* as a Neighborhood Park and Playground (NPP). This type of park is generally two to eight acres in size and is intended to provide close to home opportunities for a variety of unstructured active and passive recreation activities. The Comprehensive Parks Plan specifies that this type of park should be accessible to bicycles and pedestrians from public streets or utility ROW.

There is also one public recreation facility (Big Ditch Trail) within the project corridor. The Big Ditch Trail is a paved multi-use trail that crosses Shiloh Road via an underpass near Colton Boulevard. Two city parks, Circle Fifty Subdivision Park and Missions United Subdivision Park, are adjacent to the Big Ditch Trail on the east side of Shiloh Road. Section 3.2.5 discusses the Big Ditch Trail and its proposed extension.

Other park and recreation areas in the project corridor include a private park and a zoo. The Shiloh Village Private Park is a network of small park areas associated with the Shiloh Village Mobile Park located east of Shiloh Road between Monad Road and Central Avenue. Near the southern end of the project corridor on the east side of Shiloh Road south of Zoo Drive is ZooMontana, which is a private, non-profit facility (see Environmental Overview Maps in Appendix A for park and recreational sites).

## **Impacts**

### ***No Build Alternative***

Under the No Build Alternative, there would be no physical impacts to community resources in the project corridor, but indirect impacts related to traffic congestion would likely occur. As discussed in Section 3.2.1, traffic volumes are projected to increase with predicted population growth in the area, and could result in increased congestion along the corridor. Without improvements, drivers would likely experience difficulty accessing community resources such as schools, churches, parks and recreation facilities, and the proposed medical campuses. Additionally, the predicted decline in the LOS at major intersections could delay emergency response, especially at peak traffic hours.

### ***Build Alternatives***

Short-term impacts associated with construction are addressed in Section 3.5.



### Traffic Signals at Arterials Alternative

Although some construction and ROW impacts to community resources would occur, the proposed improvements would benefit these resources through improved vehicular and pedestrian access and safety.

**Schools.** This alternative would likely result in ROW impacts to one school property (Yellowstone Baptist College) and has the potential to temporarily impact bus stops and bus routes. The Yellowstone Baptist College property, located on Shiloh Road just north of Hesper Road, may have impacts to landscaping due to ROW under this alternative. School bus stops within the project corridor would be maintained and safe bus stop design would be integrated. School bus routes that exist on or across the project corridor would experience the benefits of reduced travel times and improved safety as a result of the proposed improvements. Additionally, pedestrian and bicycle access to schools and bus stops would be improved as a result of the proposed sidewalks and multi-use path as discussed in Section 3.2.5.

**Churches.** The parking lots of the New Life Assembly Church and Faith Chapel would likely be impacted by the proposed construction and ROW acquisition. At the New Life Assembly Church, five parking spaces would be within the construction limits, or approximately 12 percent of this facility's parking would be impacted by construction; and ten parking spaces would be within the ROW, or approximately 25 percent of this facility's parking would be impacted by ROW. At Faith Chapel, four parking spaces would be within the construction limits, or less than one percent of this facility's parking would be impacted by construction; and six parking spaces would be within the ROW, or approximately one percent of this facility's parking would be impacted by ROW. There would be no parking impacts at United Methodist Church.

There would also be potential landscaping impacts to all of these facilities from ROW acquisition. However, structures of these churches would not be impacted (see Environmental Overview Maps in Appendix A).

**Emergency Services.** The additional lanes that would be provided by the roadway improvements would likely reduce traffic congestion and therefore allow for improved passage of emergency vehicles. Because two lanes of traffic would be provided in each direction (north of Zoo Drive), the roadway improvements present an improvement over existing conditions and are anticipated to beneficially affect the response time for emergency and law enforcement vehicles.

**Hospitals.** There would be no impact to either of the existing hospitals in Billings under this alternative. The proposed improvements would beneficially affect the planned mixed-use and medical campus developments proposed by the St. Vincent Foundation and the Billings Clinic along Shiloh Road by improving safety, capacity, access, and pedestrian facilities in the project corridor.

**Parks and Recreational Facilities.** City park lands including Olympic Subdivision Park, Ann Ross Park, Rush Subdivision Park, Circle 50 Subdivision Park, and Mission United Subdivision Park would likely be impacted by proposed construction limits and ROW under this alternative.

County park lands would also have the potential to be impacted under this alternative; however, these impacts would be avoided or minimized. The multi-use path and proposed ROW would impact the planned Sharptail Park parcel under this alternative. The multi-use path would improve access to this proposed regional facility. Clydesdale Park would not be impacted by the construction or ROW limits of the roadway, but would be impacted by the proposed multi-use path that would follow the eastern edge of the park. The path would be within a proposed City easement, which would not impact the

park. However, the construction limits of the path would extend into the park due to the necessary grading. This land would still be used for recreation purposes, and pedestrian access to the park would be improved by implementing the multi-use path in this location. Pedestrian access to the Big Ditch Trail would be improved under this alternative. The proposed multi-use path and sidewalk would connect with existing pedestrian facilities at this location.

#### Roundabouts at Arterials Alternative

Impacts to schools, churches, emergency services, hospitals, and parks would be similar to the impacts discussed for the Traffic Signals at Arterials Alternative. The parking lots of the New Life Assembly Church and Faith Chapel would be impacted by the proposed construction and ROW acquisition. Parking impacts at the New Life Assembly Church would be the same as the Traffic Signals at Arterials Alternative. At Faith Chapel, six parking spaces would be within the construction limits, or less than one percent of this facility's parking would be impacted by construction; and 13 parking spaces would be within the ROW, or approximately three percent of this facility's parking would be impacted by ROW. There would be no parking impacts at United Methodist Church.

As discussed in Section 3.2.1, the LOS in the corridor for this alternative is anticipated to be the best (LOS B), travel time the lowest, and the average speed the greatest. Therefore, the response times for emergency and law enforcement vehicles would likely be better under this alternative also. The ability for fire trucks to maneuver through roundabout intersections was demonstrated by Engineering, Inc. in simulations conducted on October 26, 2005.

#### Traffic Signals at Arterials and Major Development Alternative

Impacts to schools, churches, emergency services, hospitals, and parks are similar to the impacts discussed for the Traffic Signals at Arterials Alternative. The parking lots of the New Life Assembly Church and Faith Chapel would be impacted by the proposed construction and ROW acquisition. Parking impacts at the New Life Assembly Church and Faith Chapel would be the same as the Traffic Signals at Arterials Alternative. There would be no parking impacts at United Methodist Church.

As discussed in Section 3.2.1, this alternative would have an additional four traffic signals, as compared with the Traffic Signals at Arterials Alternative, travel times would be highest and average speeds the slowest. Consequently, the response time for emergency and law enforcement vehicles would be slightly higher than any of the other build alternatives, but would still represent an improvement over the No Build Alternative.

#### Roundabouts at Arterials and Major Development Alternative

Impacts to schools, churches, emergency services, hospitals, and parks would be similar to the impacts discussed for the Traffic Signals at Arterials Alternative. The parking lots of the New Life Assembly Church and Faith Chapel would be impacted by the proposed construction and ROW acquisition. Parking impacts at the New Life Assembly Church would be the same as the Traffic Signals at Arterials Alternative, and parking impacts at Faith Chapel would be the same as the Roundabouts at Arterials Alternative. There would be no parking impacts at United Methodist Church.

As discussed in Section 3.2.1, travel times and average speeds under this alternative are projected to be better than either of the signalized alternatives; however, not as good as the Roundabouts at Arterials Alternative. Therefore, only the Roundabouts at Arterials Alternative is expected to provide better response times for emergency and law enforcement vehicles than this alternative.

## **Mitigation**

Where appropriate, MDT will minimize or avoid impacts through final design modifications including, but not limited to, reconfiguring accesses, steepening side slopes, reducing boulevard widths, or constructing retaining walls, or minimizing ROW acquisition.

Acquisition of land, and improvements, for highway construction is governed by state and federal laws and regulations that are designed to protect both the landowners and the taxpaying public. Landowners affected are entitled to receive just compensation for any land or improvements acquired and for any depreciation in value of the remaining land due to the effects of highway construction pursuant to Montana law. Acquisition will be accomplished in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."

### **3.3.2 Local and Regional Economics**

Located in south central Montana, Yellowstone County is Montana's most populous with 129,352 residents, according to the 2000 Census. Resource industries and agriculture dominate the County's economy. There are three oil refineries in the County, with two of those in Billings and the third in nearby Laurel. About 350 Montana farmers supply sugar beets to the refinery, which contributes \$50 million per year to the County's economy.

The City of Billings is the county seat and is the state's largest city in Montana with a population of 89,847. Billings is the primary center for financial, energy, transportation, and medical services as well as retail and wholesale trade in the region. The City has one of the nation's largest regional trade areas with over 125,000 square miles serving almost 400,000 people. In 1999, retail sales exceeded \$1.5 billion (City/County, 2003).

These factors contribute to the higher median incomes and lower poverty rates found in Yellowstone County and the City of Billings as compared with the State of Montana. According to the US Census, the 1999 median household income was \$36,727 in Yellowstone County and \$35,147 in the City of Billings, as compared with \$33,024 for the state as a whole. The same year, only 11.1 percent of the County population and 12 percent of the City population was at or below the US Census poverty threshold, which is lower than the statewide average of 14.6 percent.

## **Corridor Businesses**

The following commercial properties are located in the project corridor (Table 3.13):

**Table 3.13 Commercial Entities in the Project Corridor**

Property Owner	Business	Location
Pierce Building LLP	William D. Pierce Subdivision (under construction)	East side of Shiloh Road – south of Pierce Parkway
Shiloh 47 LLP	Shiloh Business Park (under construction)	East side of Shiloh Road – between Pierce Parkway and Zoo Drive
Long/Larsen Property	Undeveloped	West side of Shiloh Road – north of Zoo Montana and south of the BBWA Canal
Reger Property	Undeveloped	East side of Shiloh Road – between Zoo Drive and Hesper Road
JTL Group	Offices	SW corner of Shiloh Road and Hesper Road
JTL Group	Mining	West side of Shiloh Road – north of Hesper Road
Montana Sapphire Subdivision	Platted Commercial (under construction)	SW corner of Shiloh Road and King Avenue
Long Family Partnership	Proposed Commercial: Shiloh Crossing Subdivision	SE corner of Shiloh Road and King Avenue
Sisters of Charity of Leavenworth	Platted Mixed Use with Commercial: Village Subdivision	NW corner of Shiloh Road and King Avenue
Kon's Super	Platted Retail	NE corner of Shiloh Road and King Avenue
Victor Cetrone	Cetrone Photo Studio	SW corner of Shiloh Road and Central Avenue
Bell Family Trust	Undeveloped	SW corner of Shiloh Road and Central Avenue – SW of Cetrone Photo Studio
Leland and Loraine Wells	Kum and Go Convenience/Gas	NW corner of Shiloh Road and Central Avenue
Amy Iwata Trust	Platted Commercial: Shiloh Estates Subdivision	NW corner of Shiloh Road and Central Avenue – NW of Kum and Go Convenience/Gas
Shiloh Properties	Proposed Commercial: Shiloh Corner Subdivision	East side of Shiloh Road between Howard Avenue and Central Avenue
Faith Chapel	Shiloh Veterinary Clinic	NE corner of Shiloh Road and Howard Avenue
Billings Clinic	Proposed Mixed Use with Medical Campus	West side of Shiloh Road between Howard Avenue and Broadwater Avenue
Yegen Grand Ave Farm, Inc.	Proposed Mixed Use with Commercial: Yegen property	Both sides of Shiloh Road between Broadwater Avenue and Grand Avenue
Rocky Mountain Oil, Inc.	Holiday Convenience/Gas Station	NW corner of Shiloh Road and Grand Avenue
Soco Development	Exxon Convenience/Gas Station	NE corner of Shiloh Road and Grand Avenue
Pamela Ask	3925 Grand Avenue businesses: Samurai Garden Restaurant and Bottles and Shots West Liquor Store	North side of Grand Avenue, east of Shiloh Road
Stockman Bank	Stockman Bank	SW corner of Shiloh Road and Avenue B
Montana Development Company	Yellowstone Bank	SE corner of Shiloh Road and Avenue B
Goodman, Inc.	Platted Commercial Goodman Subdivision (under construction)	East of Shiloh Road – north of Avenue B
Lehenbauer Real Estate	Sylvan Nursery	SW corner of Shiloh Road and Avenue C
Multiple Owners	Shiloh North Shopping Center (service and retail)	East side of Shiloh Road between Avenue B and Avenue D

Source: Engineering, Inc., June 2006 – personal communication



## Impacts

The proposed improvements under the build alternatives would support the City and County plans for growth and urban expansion. The planning assumptions, including growth rates, travel patterns, and the transportation network from the *Billings Urban Area 2005 Transportation Plan* as well as proposed development plans were utilized in this project to determine the capacity improvements necessary to achieve the desired LOS in the corridor. Therefore, it is likely that implementing the proposed improvements of the build alternatives would accommodate the growth that is predicted in the City and County plans for the year 2027.

Potential impacts to commercial properties from all alternatives are provided in Table 3.14.

**Table 3.14 Potential Commerical Impacts in the Project Corridor**

No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
JTL Group				
Congestion could impact business operations making left-turn access / egress difficult.	The provision of three-quarter access only could have an impact on business operations, requiring trucks to travel out-of-direction.	Same impacts as Traffic Signals at Arterials Alternative.	Access would be relocated 50 m (165 ft) south of current location. The new access would impact an area currently used for gravel pit operations.	No impact.
Montana Sapphire Subdivision				
No impact.	The provision of three-quarter access only could have economic impacts on future commercial development.	Same impacts as Traffic Signals at Arterials Alternative.	Access would be relocated 140 m (460 ft) south of current location. The new access would impact platted parcels #9 and #10 and could have economic impacts.	No impact.
Cetrone Photo Studio				
No impact.	Landscaping and signage impacts and the loss of approximately four parking spaces.	Landscaping and signage impacts and the loss of approximately two parking spaces.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.
Shiloh Veterinary Clinic				
No impact.	Minimal landscaping and signage impacts. A new access would be provided at the Howard Avenue and Shiloh Road intersection.			
Holiday Convenience/Gas Station				
No impact.	Minimal landscaping impacts.	Greater landscaping impacts than the Traffic Signals at Arterials Alternative.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.

**Table 3.14 Potential Commercial Impacts in the Project Corridor (cont.)**

No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
<b>Exxon Convenience/Gas Station</b>				
No impact.	Landscaping and signage impacts and potential loss of 13 of the 38 existing parking spaces. Left-turns out of Exxon would be prohibited. Access could be restricted because drivers who wish to go east on Grand Avenue would have to either cross Shiloh Road and turn around or navigate across all lanes of traffic to attempt a u-turn at the Grand Avenue/Shiloh Road intersection.	Potential loss of 11 of the 38 existing parking spaces. Left-turns out of Exxon would be prohibited. Access impacts would be less because there would be fewer lanes to cross and the roundabout would better facilitate left-turns and u-turns at this intersection.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.
<b>3925 Grand Avenue Businesses: Samurai Gardens Restaurant and Bottles and Shots West Liquor Store</b>				
No impact.	Potential for minimal landscaping impacts and the potential loss of seven parking spaces. Proposed construction limits come within 3 ft (1 m) of the structure and the proposed ROW abuts the structure.	Potential for minimal landscaping impacts.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.
<b>Yellowstone Bank</b>				
No impact.	Loss of up to three parking spaces and minimal landscaping impacts.	Loss of up to three parking spaces and slightly greater landscaping impacts than the Traffic Signals at Arterials Alternative.	Similar impacts as Traffic Signals at Arterials Alternative.	Similar impacts as Roundabouts at Arterials Alternative.
<b>Stockman Bank</b>				
No impact.	Minimal landscaping impacts.			

**Table 3.14 Potential Commercial Impacts in the Project Corridor (cont.)**

No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
Shiloh North Shopping Center				
No impact.	Potential for landscaping signage and parking impacts. Proposed construction limits come within 3 ft (1 m) of the southernmost existing structure, and the proposed ROW abuts the structure.			
Sylvan Nursery				
No impact.	Landscaping and signage impacts.			

Source: Engineering, Inc. Design Files

### **No Build Alternative**

The project area has been identified as a growth area in local planning documents. The majority of the project area is part of the urban expansion zone, as identified in the *West Billings Plan*. The remainder of the project area is already within the City of Billings limits. Future land use is planned for residential and commercial development throughout the corridor. Additionally, Shiloh Road was designated as a community entryway and the expansion of the roadway was identified as a recommended long-range improvement in the *Billings Urban Area 2005 Transportation Plan*.

If the No Build Alternative is selected, the pace of development in the project corridor could be affected. Developers could opt for alternate sites outside of the project corridor or outside of Billings based on transportation infrastructure needs or to avoid traffic congested locations. Developers who decide to develop parcels in the corridor would likely incur more cost for transportation infrastructure improvements than they would under any of the build alternatives because they may need to contribute to the transportation improvements to accommodate the development.

Existing businesses could be negatively impacted by increasing congestion in the corridor as traffic volumes increase. As discussed in Section 3.2.1, all major intersections in the corridor are expected to operate at LOS E or F during the design hour (PM Peak Hour) by 2027 if no improvements are made.

There would be no cost associated with this alternative because there would be no improvements.

### **Build Alternatives**

Short-term impacts associated with construction are addressed in Section 3.5.

#### **Traffic Signals at Arterials Alternative**

ROW would be required from all of the above listed commercial property owners (see Section 3.3.4). Access to Shiloh Road would also change for many of the identified businesses, as discussed in Section 3.2.2. Other impacts to existing commercial properties in the project corridor are summarized in Table 3.14.

The proposed improvements would include installing new street lights throughout the corridor. If a new SID was created to help fund the maintenance of these lights, property owners within the boundaries of the SID would be negatively impacted by being assessed for these maintenance costs.

The construction cost is estimated to be \$26.2 – \$33.2 million (in 2009 dollars). Traffic signals are more costly to construct than roundabouts and also require slightly more ROW acquisition.

#### Roundabouts at Arterials Alternative

Impacts due to the Roundabouts at Arterials Alternative would be similar to those described for the Traffic Signals at Arterials Alternative.

ROW requirements for this alternative would impact the same businesses as with the Traffic Signals at Arterials Alternative with two exceptions. Fewer parking spaces are impacted at the Cetrone Photo Studio and the Exxon gas station (refer to Table 3.14). There are also no impacts to 3925 Grand Avenue businesses due to proposed ROW.

The construction cost is estimated to be \$24.0 – \$27.8 million (in 2009 dollars).

#### Traffic Signals at Arterials and Major Development Alternative

Impacts due to the Traffic Signals at Arterials and Major Development Alternative would be similar to those described for the Traffic Signals at Arterials Alternative in Table 3.14, except at JTL Group and Montana Sapphire Subdivision. The county road and JTL access would be shifted south of its current location, which could have some impact on gravel mining operations. The access for Montana Sapphire Subdivision would also be shifted south and would bisect a platted, undeveloped parcel. An economic impact could result from the division of this parcel, as well as the conversion of private land to roadway.

ROW would be required from all of the commercial properties identified in the project corridor (see Section 3.3.4). Other types of business impacts would be similar under this alternative to the Traffic Signals at Arterials Alternative, but the four additional traffic signals proposed would improve access for businesses at those locations.

The construction cost is estimated to be \$27.8 – \$36.4 million (in 2009 dollars).

#### Roundabouts at Arterials and Major Development Alternative

Impacts due to the Roundabouts at Arterials and Major Development Alternative would be similar to those described for the Roundabouts at Arterials Alternatives.

The construction cost is estimated to be \$25.9 – \$30.8 million (in 2009 dollars).

### **Mitigation**

See Section 3.3.4 for mitigation of impacts to property and structures.

### **3.3.3 Land Use and Local Plans**

As discussed in Section 1.1.1, the proposed project is located in Yellowstone County near the western edge of the City of Billings (refer to Figure 1.1). The City limits straddle the project corridor in some areas, and jurisdiction of the adjacent land is a combination of City and County. The City and County have produced a number of planning documents that apply to land use in the study area. These include the following:

## **Yellowstone County Comprehensive Parks Plan**

This plan was approved by the County in 1984 to document and classify recreational resources in the County and outline objectives for future parks acquisition and funding.

## **Parks2020 - The Billings Parks, Recreation and Open Space Master Plan**

The plan was approved by the City and County in 1997 and outlines recommendation for future management of park lands, recreational opportunities and open spaces in the Billings Urban Area.

## **West Billings Storm Drain Master Plan**

This plan was approved by the City in 1991 and documents the analysis and planning objectives for future storm drainage facilities in West Billings.

## **West Billings Plan**

This plan was approved by the City and County in 2001 and was intended to provide planning guidance to address the specific issues related to growth pressures in West Billings. The following guidance and recommendations in the plan are applicable to the Shiloh Road corridor.

- Design Shiloh Road as a Community Entryway Corridor.
- Incorporate landscaping into design of center medians.
- Incorporate grass, shrubs, and trees in roadside landscaping.
- Incorporate context sensitive design concepts.
- Design sidewalks with pedestrian safety and enjoyment in mind.
- Separate pedestrian walkways from vehicular traffic with landscaped areas.

## **2003 Growth Policy Plan**

The *2003 Growth Policy* is founded on completed plans and policies already approved by Yellowstone County and the City of Billings such as the *West Billings Plan*, the *Billings Urban Area Transportation Plan 2005*, the *Parks2020 Plan*, and the *BikeNet Plan*. The plan is a collection of goals and objectives and implementation strategies intended to guide local decision making.

## **Heritage Trail Plan**

An update to the *1994 BikeNet Plan*, the *Heritage Trail Plan* was completed in 2004 and includes a larger constituency of users including walkers and runners, in-line skaters and skateboarders, bicyclists, equestrians, and others. Proposed pedestrian facilities and design guidelines are outlined in the plan.

## **Northwest Shiloh Area Plan**

This plan was approved by the City and County in 2001 and was intended to provide planning guidance to address the specific issues related to growth pressures in Northwest Billings.

## **Yellowstone County Land Use**

Private land in Yellowstone County accounts for more than 82 percent of the land area. The other 18 percent is divided among federal, state, and local government agencies. Land use in the County falls into five main categories: agricultural, residential, commercial, industrial, and recreational. The

majority of the county, approximately 540,000 ha (1,337,000 ac), is classified by the Montana Department of Revenue as agriculture. There are approximately 2,800 ha (7,000 ac) of commercially and industrially-classed property and 210,000 ha (519,000 ac) of residentially-classed property throughout the County. The remaining 121,000 ha (300,000 ac) includes land administered by the Bureau of Indian Affairs or is not classified or exempt.

Land accessible for recreational purposes is distributed throughout the County. The largest recreational areas are held by the US Bureau of Land Management (BLM). County parks make up a small fraction of the total recreation land in the County.

The Shiloh Road Corridor project area is located at the western edge of Billings and is characterized as a transition area between the rural area to the west and developed area of the City to the east. The project's construction limits include a 7.27 km (4.52 mi.) section of the Shiloh Road corridor from the Canyon Creek Bridge (RP 4.75) to Poly Drive (RP 0.25). Shiloh Road provides access to the Shiloh Road Interchange on I-90 via Zoo Drive.

### ***Billings Land Use***

The City of Billings contains 99,407 sq. km (38,381 sq. mi.) and is the largest city in Montana. The City of Billings and Yellowstone County share Unified Zoning Regulations, but the City and the County administer their zoning separately. Each jurisdiction has a Zoning Commission and a Board of Adjustment. The City Zoning Commission reviews Special Reviews and Zone Changes and forwards recommendations to the City Council for final action.

### ***West Billings Land Use***

West Billings, where the project corridor is located, is the fastest growing portion of the Billings Metropolitan Planning area. It includes approximately 91 sq. km (35 sq. mi.) of land north of Yellowstone River, south of Rimrock Road, west of the Billings city limits, and east of 72<sup>nd</sup> Street. Refer to Figure 1.4 for existing and future development along the corridor. Agriculture is the predominant land use in the West Billings area followed by residential uses. According to the Yellowstone County GIS, there are about 1,287 ha (3,181 ac) of residential land use, comprising approximately 14 percent of the area. Single-family housing comprises the great majority of this land use with approximately 1,600 dwelling units existing. A small number of multi-family units exist near the east boundary of West Billings.

Small pockets of commercial land uses are found at intersections along Shiloh Road south of King Avenue, primarily serving the local residents. East of Shiloh Road within the Billings city limits, an extensive area of commercial development exists, especially along King Avenue and Grand Avenue.

Major concentrations of industrial land use are located primarily south of King Avenue in proximity to Interstate 90. The most common and visible industrial land use is gravel extraction, but other light fabrication and construction operations exist.

Agriculture has long been the dominant land use within the West Billings area, but the past 20 years has seen a shift in this trend as the urban area of the City pushes westward. Urban developments, including residential, commercial, and industrial, have increased in West Billings resulting in an average decline of 65 ha (160 ac) per year of land utilized for productive agriculture.

## Impacts

### **No Build Alternative**

Many of the current land uses along Shiloh Road are projected by local planning agencies to change by 2027. Agricultural land would give way to commercial and residential uses as the City of Billings expands to the west. The No Build Alternative is consistent with the *Northwest Shiloh Area Plan*. Other than the Zoo Drive intersection, the No Build Alternative is not consistent with the *2003 Growth Policy Plan* goal to improve the urban streetscape and I-90 connections nor the *West Billings Plan* for Shiloh Road to be reconstructed as a community entryway. It also is not consistent with the *Heritage Trail Plan* to develop an off-street trail along Shiloh Road.

### **Build Alternatives**

The primary land use changes related to the build alternatives would be the change from roadway-adjacent agricultural, commercial, industrial, and residential land to transportation and/or recreation uses (multi-use path) within the proposed Shiloh Road ROW and/or easements. This growth would continue to occur without the proposed improvements to the Shiloh Road corridor. As a result, the proposed improvements to the corridor would not induce growth in this area, but rather would accommodate the current growth occurring in the corridor.

The build alternatives are consistent with the *2003 Growth Policy Plan* and the *Billings Urban Area 2005 Transportation Plan*, which specifies that the corridor should be reconstructed as a four-lane facility. The build alternatives incorporate the guidance and recommendations of the *West Billings Plan*, as discussed above. These alternatives also incorporate a multi-use path as identified for the Shiloh Road corridor in the *Heritage Trail Plan*. The build alternatives are also consistent with applicable goals and policies outlined in the *Northwest Shiloh Area Plan*. Specifically, the build alternatives coordinate utility, land use, and transportation planning in order to plan for the cost-efficient extension and delivery of public services and provide a safe and efficient transportation system. The storm water facilities for the build alternatives were developed in consultation with the City and are consistent with the current interim storm water conveyance system for the Shiloh Drain, which was proposed in the *West Billings Storm Drain Master Plan* and implemented by the City. This project does not implement the long-term storm water conveyance solutions for the Shiloh Drain as proposed in the *West Billings Storm Drain Master Plan*.

## Mitigation

No adverse land use or local plan impacts were identified for the build alternatives. Consequently, no mitigation is necessary.

### **3.3.4 Right-of-Way and Relocations**

The existing ROW through the project corridor is a combination of City and MDT ROW. The width of ROW in the corridor ranges from approximately 19 m (62 ft) to 49 m (160 ft). The existing ROW widths are summarized below in Table 3.15.

**Table 3.15 Existing Right-of-Way Widths**

Roadway Segment	Existing ROW Width
Canyon Creek Bridge to the BBWA Canal Crossing	49 m (160 ft)
BBWA Canal Crossing to just north of Hogan's Slough	36 m (118 ft) – 40 m (131 ft)
Just north of Hogan's Slough to King Avenue (in front of the JTL Group property)	23 m (75.5 ft)
King Avenue to Monad Road	36.5 m (120 ft)
Monad Road to Partridge Drive	29 m (95 ft)
Partridge Drive to north end of Shiloh Mobile Home Park	32 m (105 ft)
North end of Shiloh Mobile Home Park to Central Avenue	23 m (75.5 ft)
Central Avenue to south property line of Faith Chapel	23.6 m (77 ft)
South property line of Faith Chapel to Broadwater Avenue	32 m (105 ft)
Broadwater Avenue to Grand Avenue	19 m (62 ft)
Grand Avenue to south of Avenue D	36.5 (120 ft)
South of Avenue D to Parkhill Drive	27.5 m (90 ft)
Parkhill Drive to Poly Drive	28 m (92 ft) – 36.5 m (120 ft)

Source: Engineering, Inc. design files

There are also several existing easements in the corridor including irrigation easements, sidewalk easements, and the Shiloh Drain easement. These easements, which are summarized in Table 3.16, are all adjacent to the existing ROW limits.

**Table 3.16 Existing Easements in the Corridor**

Easement Type	Easement Holder	Location
Irrigation Easement	City of Billings	East side of Shiloh Road – south of Pierce Parkway
Irrigation Easement	Canyon Creek Ditch Company	East of Shiloh Road – north of Pierce Parkway
Sidewalk Easement	City of Billings	Southeast corner of Zoo Drive and Shiloh Road
Irrigation Easement	Canyon Creek Ditch Company	92 m (300 ft) segment on the east side of Shiloh Road between Pierce Parkway and Zoo Drive
Irrigation Easement	Canyon Creek Ditch Company	East side of Shiloh Road between Zoo Drive and the BBWA Canal
BBWA Easement	City of Billings	East side of Shiloh Road – north of Temple Place
Shiloh Drain Easement	City of Billings	West of Shiloh Road between King Avenue and Broadwater Avenue
Sidewalk Easements	City of Billings	West side of Shiloh Road between King Avenue and Monad Road
Utility Easements	City of Billings	Both sides of Shiloh Road between Grand Avenue and Corbin Drive



**Table 3.16 Existing Easements in the Corridor (cont.)**

Easement Type	Easement Holder	Location
Big Ditch Easement	Big Ditch Company	East side of Shiloh Road at Colton Boulevard
Sidewalk Easement	City of Billings	East side of Shiloh Road between Colton Boulevard and Poly Drive
Hi-Line Ditch Easement	Hi-Line Ditch Company	East side of Shiloh Road – north of Poly Drive

Source: Engineering, Inc. design files

## Impacts

The ROW impacts by alternative are presented in Table 3.17.

**Table 3.17 Potential Right-of-Way Impacts by Alternative**

Land Ownership	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
County Land	0	0.02 ha (0.05 ac)	0.01 ha (0.03 ac)	0.01 ha (0.02 ac)	0.01 ha (0.02 ac)
City Land	0	1.2 ha (3.0 ac)	1.2 ha (3.0 ac)	1.2 ha (3.0 ac)	1.3 ha (3.2 ac)
Private Land	0	10.4 ha (25.6 ac)	8.8 ha (22.0 ac)	10.3 ha (25.4 ac)	9.3 ha (23.0 ac)
<b>TOTAL</b>	<b>0</b>	<b>11.6 ha (28.7 ac)</b>	<b>10.0 ha (25.0 ac)</b>	<b>11.5 ha (28.4 ac)</b>	<b>10.6 ha (26.2 ac)</b>

Source: Engineering, Inc. design files

Under all of the build alternatives, there would be impacts to public and private property from the Shiloh Road improvements including the proposed multi-use path. This path is proposed to parallel Shiloh Road from the entrance of ZooMontana (near the southern project limit) to Poly Drive (at the northern project limit). Between ZooMontana and Colton Boulevard, the path would parallel Shiloh Road on the west side and from Colton Boulevard to Poly Drive, the path would parallel Shiloh Road on the east side.

The multi-use path would be within MDT ROW for most of its length. From just south of King Avenue (at Montana Sapphire Drive) to Broadwater Avenue, it is likely that the multi-use path would not be in MDT ROW because the Shiloh Drain would separate the multi-use path from the roadway for most of this segment. The City of Billings recently acquired the Shiloh Drain including the associated easements outside the drain. Therefore, the multi-use path in this location would be within the City's easement. The additional area for the multi-use path between Montana Sapphire Drive and Broadwater Avenue would amount to approximately 0.85 ha (2.1 ac) of land.

Impacts to existing structures in the corridor would also occur under all of the build alternatives. These impacts are summarized in Table 3.18. Some of these structures could be impacted by the proposed ROW only and others could be impacted by both proposed ROW and construction limits. The structures that are within construction limits would likely need to be relocated or removed. The structures that are

outside the construction limits, but within the proposed ROW would be more likely to be avoided with mitigation measures. Measures to avoid these structures would be assessed during final design.

**Table 3.18 Potential Structure Impacts by Alternative**

Type of Impact	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
Commercial Structure	No impact.	2 within ROW: <ul style="list-style-type: none"> <li>Shiloh North Shopping Center</li> <li>3925 Grand Businesses</li> </ul>	1 within ROW: <ul style="list-style-type: none"> <li>Shiloh North Shopping Center</li> </ul>	2 within ROW: <ul style="list-style-type: none"> <li>Shiloh North Shopping Center</li> <li>3925 Grand Businesses</li> </ul>	1 within ROW: <ul style="list-style-type: none"> <li>Shiloh North Shopping Center</li> </ul>
Residential Structure	No impact.	2 within ROW: <ul style="list-style-type: none"> <li>2 townhomes located in Ponderosa and Fox Run Townhomes</li> </ul>	3 within ROW: <ul style="list-style-type: none"> <li>2 townhomes located in Ponderosa and Fox Run Townhomes</li> <li>1 single-family home</li> </ul>	2 within ROW: <ul style="list-style-type: none"> <li>2 townhomes located in Ponderosa and Fox Run Townhomes</li> </ul>	3 within ROW: <ul style="list-style-type: none"> <li>2 townhomes located in Ponderosa and Fox Run Townhomes</li> <li>1 single-family home</li> </ul>
Secondary Structure	No impact.	3 within ROW: <ul style="list-style-type: none"> <li>3 residential outbuildings associated with Shiloh Village Mobile Home Park</li> </ul> 3 within ROW and construction limits: <ul style="list-style-type: none"> <li>1 residential outbuilding</li> <li>1 pumphouse</li> <li>1 chicken coop</li> </ul>	3 within ROW: <ul style="list-style-type: none"> <li>3 residential outbuildings associated with Shiloh Village Mobile Home Park</li> </ul> 3 within ROW and construction limits: <ul style="list-style-type: none"> <li>1 residential outbuilding</li> <li>1 pumphouse</li> <li>1 chicken coop</li> </ul>	3 within ROW: <ul style="list-style-type: none"> <li>3 residential outbuildings associated with Shiloh Village Mobile Home Park</li> </ul> 3 within ROW and construction limits: <ul style="list-style-type: none"> <li>1 residential outbuilding</li> <li>1 pumphouse</li> <li>1 chicken coop</li> </ul>	3 within ROW: <ul style="list-style-type: none"> <li>3 residential outbuildings associated with Shiloh Village Mobile Home Park</li> </ul> 3 within ROW and construction limits: <ul style="list-style-type: none"> <li>1 residential outbuilding</li> <li>1 pumphouse</li> <li>1 chicken coop</li> </ul>
<b>TOTAL</b>		<b>10 structures:</b> <b>7 within ROW</b> <b>3 within ROW and construction limits</b>	<b>10 structures:</b> <b>7 within ROW</b> <b>3 within ROW and construction limits</b>	<b>10 structures:</b> <b>7 within ROW</b> <b>3 within ROW and construction limits</b>	<b>10 structures:</b> <b>7 within ROW</b> <b>3 within ROW and construction limits</b>

Source: Engineering, Inc. design files

### **No Build Alternative**

No additional ROW, easements, or building relocations or acquisitions would be needed.

## **Build Alternatives**

Short-term impacts associated with construction are addressed in Section 3.5.

Additional ROW would be required for all of the build alternatives as described in Table 3.17. Most of the ROW required for the reconstruction of Shiloh Road is in private ownership, but some City and County land would also be impacted in all of the build alternatives. ROW and relocations could occur both on Shiloh Road and on cross-streets within the project area (see Environmental Overview Maps in Appendix A for potential structure impacts sites). The Traffic Signals at Arterials Alternative would require slightly more ROW than the Traffic Signals at Arterials and Major Development due to additional double turn-lanes that are required at King Avenue for the Traffic Signals at Arterials Alternative. These double turn-lanes are not required for the Traffic Signals at Arterials and Major Development Alternative. The roundabout intersections would require slightly less ROW overall than the signalized intersections. This is primarily due to the additional width requirements of the turn lanes in the signalized design.

## **Mitigation**

Where appropriate, MDT will minimize or avoid impacts through final design modifications including, but not limited to, reconfiguring accesses, steepening side slopes, reducing boulevard widths, or constructing retaining walls, or minimizing ROW acquisition.

Acquisition of land, and improvements, for highway construction is governed by state and federal laws and regulations that are designed to protect both the landowners and the taxpaying public. Landowners affected are entitled to receive just compensation for any land or improvements acquired and for any depreciation in value of the remaining land due to the effects of highway construction pursuant to Montana law. Acquisition will be accomplished in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."

### **3.3.5 Utilities**

The following utility providers maintain active infrastructure within the project corridor. The sections below describe the parts of the systems that lie within the existing or proposed roadway corridor. Additional utility information will likely be discovered and would be incorporated into the design during preparation of construction documents if a build alternative is selected.

#### **City of Billings Public Works Department**

The City of Billings provides water and wastewater services within the City limits, which covers a portion of the study area. Sanitary sewer lines run along both sides of Shiloh Road within existing MDT ROW north of Grand Avenue and cross Shiloh Road at Central Avenue and King Avenue. The City is proposing to modify the water and sanitary sewer systems in the Shiloh Road area in order to accommodate the anticipated future development to the west of Shiloh Road. Storm sewers exist only on the east side of Shiloh Road north of Grand Avenue and cross Shiloh Road at Grand Avenue. Shiloh Drain (from Montana Sapphire Drive to Broadwater Avenue) has been recently acquired by the City to provide storm water drainage.

#### **Northwestern Energy**

Northwestern Energy provides electricity and natural gas to the Billings area. Distribution lines cross over Shiloh Road from the east just south of Pierce Parkway and continue north along the west side of

Shiloh Road up to Hesper Road. The distribution lines switch to the east side of Shiloh Road directly south of Hesper Road and continue north to King Avenue where they join with transmission lines from the substation located west of Shiloh Road along King Avenue. From King Avenue to Grand Avenue both transmission and distribution exist. At Grand Avenue the distribution lines travel east and west, and the distribution lines continue north along the east side of Shiloh Road. Numerous underground power service lines cross under Shiloh Road from the distribution line to serve residences and businesses.

### **Yellowstone Valley Electric Cooperative**

Yellowstone Valley Electric Cooperative (YVEC) provides electricity along the Shiloh Road via distribution lines from Monad Road to Poly Drive and beyond. The lines are overhead power lines along the east side of Shiloh Road. Service and distribution lines cross Shiloh Road using both overhead and underground construction at numerous locations to serve development west of Shiloh Road.

### **Montana-Dakota Utility Co. (MDU)**

Natural gas lines were identified along Shiloh Road commencing at the Central Avenue intersection and extending north of Poly Drive. There are miscellaneous service and distribution lines that intersect the gas main in this reach to serve adjacent development.

### **Williston Basin**

Williston Basin provides natural gas to most of the western Billings area via a 300-mm (12-in) high pressure gas main which intersects Shiloh Road ROW near Hesper Road and extends north along the west side of the existing roadway north to Central Avenue. At Central Avenue the gas main crosses Shiloh Road and extends east to a distribution station, where MDU receives its natural gas supply.

### **Bresnan Phone Company**

Overhead phone and underground fiber optic lines were identified along the Shiloh Road project corridor from just south of King Avenue to Poly Drive, with various service lines crossing Shiloh Road to serve adjacent development.

### **Sprint**

Phone lines were identified along the west side of Shiloh Road for the majority of the project corridor and at a few locations on the east side.

## **Impacts**

### ***No Build Alternative***

No impacts or disruptions to utility systems would occur.

### ***Build Alternatives***

Because the build alternatives are all on the same alignment and would have similar construction footprints, impacts to utilities in the corridor would be similar. Potential disruptions could occur for utility systems in the corridor. Power poles; natural gas pipelines and border stations, valving systems, and individual connections; storm water systems; and communications systems could be impacted by construction activities. Most water and sewer lines should not be impacted, as they are located at a depth beyond the construction activities expected for this project. However, the City is proposing to

expand the water and sanitary sewer systems in the Shiloh Road area. The City would like to include the utility stubs for the expansion with the Shiloh Road project through separate funding. The City and MDT would coordinate these projects if possible to minimize construction impacts.

### **Mitigation**

In accordance with MDT Standard Specifications, utility companies will be contacted to coordinate activities to avoid or minimize disruption to service. According to Montana statute, as applicable, MDT will pay a portion of any required utility relocations.

### **3.3.6 Energy**

Energy use within the corridor currently relates to vehicle fuel consumption and the power required for operation of two signalized intersections and intermittent street and intersection lighting.

### **Impacts**

#### ***No Build Alternative***

The No Build Alternative would result in increased traffic congestion along Shiloh Road. At intersections without signals, delays would increase over time. Travel delays result in increased engine idling as cars wait to go through intersections as well as stop and start along a congested roadway corridor. The increased idling results in additional fuel consumption and reduced mileage for each vehicle delayed.

#### ***Build Alternatives***

The improved LOS under all of the build alternatives would result in fewer delays and less congestion than the No Build Alternative, therefore, the average vehicular fuel consumption would be less than the No Build Alternative. For all build alternatives, additional power would also be required for lighting along the roadway corridor, which must be provided for safety reasons since the urban typical section includes raised median and curbs. The Traffic Signals at Arterials Alternative would require electrical power at five additional intersections and Traffic Signals at Arterials, and Major Development Alternative would require electrical power at nine additional intersections. The additional electrical power would be necessary for signal operation, and intersection and corridor lighting. Therefore, the electric power requirements under the Traffic Signals at Arterials Alternative and Traffic Signals at Arterials and Major Development Alternative would be higher than for the No Build Alternative.

Roundabouts are designed for the controlled, continuous flow of traffic. As a result, vehicles would not idle at intersections. Therefore, there would be less fuel consumed than for the signalized alternatives. In addition, since there are no traffic signals, power would only be needed for intersection and roadway lighting, thereby also reducing energy consumption compared to the signalized intersections alternatives.

### **Mitigation**

No mitigation is required.

### **3.3.7 Cultural/Archaeological/Historical Resources**

Historic and cultural resources are defined in Section 301 of the National Historic Preservation Act (NHPA) of 1966, as amended, as “any prehistoric or historic district, site, building, structure, or object

included in, or eligible for inclusion in the National Register of Historic Places (NRHP) [16 USC 470W].” Cultural resources are determined for listing on the NRHP through consideration of established criteria. In order to be eligible for listing on the NRHP, the property in question must be important in American history, architecture, archaeology, engineering, or culture, while also possessing integrity of location, design, setting, materials, workmanship, feeling, and association. In addition, properties must meet at least one of the following criteria:

- A. Association with events that have made a significant contribution to the broad patterns of the area’s history.
- B. Association with the lives of persons significant in the area’s past.
- C. Embodiment of distinctive characteristics of a type, period, or method of construction, or representation of the work of a master, or possession of high artistic values, or representation of a significant distinguishable entity whose components may lack individual distinction.
- D. Has yielded, or may be likely to yield, information important in prehistory or history.

A cultural resources inventory was conducted for the proposed project for MDT in compliance with federal guidelines, including Sections 106 and 110 of the NHPA, 36 CFR 800 to identify resources listed on or eligible for listing on the NRHP.

The Shiloh Road Corridor project area has been heavily impacted by urban development during the past 40 years, resulting in the loss of integrity of the area as a rural historic landscape. Nonetheless, a total of 14 historic sites were identified within the project inventory corridor, four of which are previously recorded sites and ten of which are newly recorded sites. Of these 14 historic sites, two previously recorded sites and two newly recorded sites are recommended eligible for inclusion in the NRHP. No prehistoric sites were identified within the project inventory area.

Two field inventories were conducted for this project. The first inventory covered the original project limits between Canyon Creek and Grand Avenue and was conducted between November 15, 2002 and February 21, 2003. The second inventory was conducted on November 17, 2004 to cover the area between Grand Avenue and Poly Drive after this area was added to the project limits. Both field inventories consisted of a pedestrian survey of the project area. The inventory corridor extended 120 m (400 ft) on each side of the existing Shiloh Road centerline. Inventory transects were spaced 30 m (100 ft) apart, for a total of four transects on each side of Shiloh Road within the project limits. Only sites with features that date prior to 1959 were recorded. No subsurface testing was done during the inventory, and buildings or sites more than 120 m (400 ft) from the Shiloh Road centerline were not documented.

A list of sites inventoried is presented in Appendix F. The description and recommendation criteria for each NRHP-eligible site are included with the site name in Table 3.19. The State Historic Preservation Office (SHPO) was consulted and concurred with the findings regarding the NRHP eligibility of these sites (See Appendix F).

**Table 3.19 Cultural Inventory of NRHP-Eligible Sites along Shiloh Road**

Name Of Cultural Site	Description	NRHP Status
BBWA Irrigation Canal Site 24YL161/1382/1532	Previously recorded site. The canal was constructed in 1904 as a result of the Carey Land Act of 1895 that provided government support for the development of irrigation systems to be used for farming. In 1903 the Billings Bench was chosen as one of two major irrigation sites in the state.	Recommended eligible under criterion A.
Bunkhouse Site 24YL1559	Newly recorded site, 2003. This site consists of two features: a Depression Era migrant sugar beet laborer bunkhouse and an outhouse foundation. The bunkhouse is a former school. Constructed in 1920.	Recommended eligible under criterion C.
Snow Ditch Site 24YL1563	Newly recorded site, 2003. The canal was constructed in 1907, although the road-related irrigation features were constructed less than 50 years ago and are considered modern. The canal diverts water for the Big Ditch main canal and is part of a three-system irrigation organization known as the Big Ditch group.	Recommended eligible under criterion A.
Big Ditch Canal Site 24YL664/24ST296	Previously recorded site, 1995 The canal was constructed in 1883 and was intended to carry water through all irrigation avenues in Billings. At the proposed crossing location, the physical location has been altered, as has the original constructional integrity.	Recommended eligible under criterion A.

## Impacts

Section 106 of the NHPA requires MDT and FHWA to identify NRHP-eligible cultural resources within the project area and then to determine the effects of the proposed project on NRHP-listed or -eligible cultural resources. For each resource within the area of potential effect (APE), FHWA and MDT determined whether the alternatives would have No Effect, No Adverse Effect, or Adverse Effect. MDT's determination of effect for all of the project alternatives is summarized in Table 3.20. SHPO concurred with this determination on August 23, 2006 (see Appendix F).

**Table 3.20 Cultural Resource Impacts by Alternative**

	<b>No Build Alternative</b>	<b>Traffic Signals at Arterials Alternative</b>	<b>Roundabouts at Arterials Alternative</b>	<b>Traffic Signals at Arterials and Major Development Alternative</b>	<b>Roundabouts at Arterials and Major Development Alternative</b>
BBWA Irrigation Canal Site 24YL161/1382 /1532	<b>No Effect.</b>	<b>No Adverse Effect.</b> The presence of the new multi-use path structure and the construction related impacts that would occur would not affect the capacity or function of the canal.			
Bunkhouse Site 24YL1559	<b>No Effect.</b>	<b>No Effect.</b> The site is outside construction and ROW limits.			
Snow Ditch Site 24YL1563	<b>No Effect.</b>	<b>No Adverse Effect.</b> The replacement of culvert, installation of additional culvert, and placement of guardrail would not affect the capacity or function of the ditch.			
Big Ditch Canal Site 24YL664/24S T296	<b>No Effect.</b>	<b>No Effect.</b> The site is outside construction and ROW limits.			

### ***No Build Alternative***

The No Build Alternative would have no effect on cultural resources in the project area.

### ***Build Alternatives***

Short-term impacts associated with construction are addressed in Section 3.5.

#### ***BBWA Canal (24YL161/1382/1532)***

The BBWA Canal would be affected under all of the build alternatives; however, it would not be adversely affected. A new bridge would span the BBWA Canal immediately west of the existing bridge to accommodate the proposed multi-use path. The impacts of this action would include:

- The BBWA would require concrete lining of the canal under the structure and an estimated 3 m (10 ft) upstream and downstream of the structure for maintenance reasons. This action would not affect function or capacity of the canal.
- The footings for the multi-use path bridge would be on or near the top-of-bank on both sides of the canal.
- Construction and grading impacts would occur to the exterior embankments of the canal (the embankments on the north and south sides of the canal). These impacts would be approximately 0.05 ha (0.12 ac) for the all build alternatives.
- Construction impacts to the BBWA Canal easement would occur east of the bridge on the north side. These impacts would be approximately 0.04 ha (0.11 ac) for the traffic signal



alternatives and approximately 0.03 ha (0.07 ac) for the roundabout alternatives. This impact area was calculated based on the typical 36 m (118 ft) wide BBWA Canal easement in the Shiloh Road corridor.

- Temporary construction related impacts would be expected due to erosion control measures that would be required in the ditch downstream of any improvements.

#### Bunkhouse (24YL1559)

The Bunkhouse would not be affected under any of the build alternatives. The traffic signal alternatives avoid direct impacts to the site and structure through ROW minimization. The roundabout alternatives avoid direct impacts to the site through an alignment shift, modifications to sidewalk design, construction of retaining wall, and ROW minimization.

#### Snow Ditch (24YL1563)

The Snow Ditch would be affected under all build alternatives. The replacement of existing culvert, installation of additional culvert, and placement of guardrail would be required. The impacts of this action would include:

- Impacts due to placing some portions in culvert would occur. These linear impacts would be approximately 90 m (295 ft) for the traffic signal alternatives and approximately 100 m (328 ft) for the roundabout alternatives.
- Impacts related to the installation of guardrail at the top embankment could occur. Guardrail may be placed along 440 m (1,444 ft) for the traffic signal alternative and 275 m (902 ft) for the roundabout alternatives.
- The diversion structure and head gate would be relocated from its current location (on the southwest corner of Central Avenue and Shiloh Road) to either an adjacent location or to the northwest corner.
- The small pumphouse would be relocated from its current location (on the southeast corner of Central Avenue and Shiloh Road) south to a location near the Shiloh Village Mobile Home Park.
- Temporary construction related impacts would be expected due to erosion control measures that would be required in the ditch downstream of any improvements.

#### Big Ditch Canal (24YL664/24ST296)

The Big Ditch Canal would not be affected by any of the build alternatives. The Big Ditch was put into culvert near Shiloh Road to install a pedestrian underpass in 2000. The ditch goes into culvert 75 m (246 ft) west of Shiloh Road and comes out of culvert 88 m (289 ft) east of Shiloh Road. The exposed areas of the ditch are well beyond the construction and ROW limits of this project.

### **Mitigation**

The following mitigation measures/design modifications would be required at the BBWA Canal site, Bunkhouse site, and Snow Ditch site to minimize or avoid impacts.

### ***BBWA Canal (24YL161/1382/1532)***

#### *Traffic Signal Alternatives*

To minimize impacts:

- No piers for the new multi-use path bridge will be located in the BBWA Canal.
- On the approaches to the Shiloh Road bridge, as necessary and feasible eliminate the boulevard width separating the sidewalk from the roadway and install guardrail or other measures to meet safety requirements for separating pedestrians from traffic.
- Cantilever the fencing off the east side of the existing Shiloh Road bridge (if determined necessary in final design) to avoid impacts to the BBWA Canal.

#### *Roundabout Alternatives*

To minimize impacts:

- No piers for the new multi-use path bridge will be located in the BBWA Canal.
- On the Shiloh Road bridge and corresponding approaches, as appropriate reduce the boulevard width separating the sidewalk from the roadway to approximately 0.6 m (2 ft).

### ***Bunkhouse (24YL1559)***

#### *Traffic Signal Alternatives*

To avoid the site:

- Reduce the ROW requirement from 3 m (10 ft) to match the Bunkhouse site's southern boundary.

#### *Roundabout Alternatives*

To avoid the site:

- Construct an approximately 0.15-m (0.5-ft) wide retaining wall between the back of sidewalk and southwest corner of site.
- Eliminate the boulevard width (1.5 m [5 ft]) that is proposed to separate the sidewalk and the roadway.
- Narrow the sidewalk to meet the minimum ADA requirement of 0.9 m (3 ft) at the southwest corner of the Bunkhouse site (the sidewalk will resume the proposed 2.1 m [7 ft] width on both sides of this section where it is adjacent to the curb).
- Shift the roundabout to the west approximately 2.5 m (8.2 ft) and south approximately 4.6 m (15.1 ft).
- Reduce the ROW requirement from 3 m (10 ft) beyond the construction limits to approximately 0.3 m (1 ft) beyond the outside edge of sidewalk and near the edge of the retaining wall at the southwest corner of the Bunkhouse site.

## ***Snow Ditch (24YL1563)***

### *Traffic Signal Alternatives*

To minimize impacts:

- Replace the standard 6-to-1 (horizontal to vertical) side slope with a steeper side slope where the ditch is not in culvert in order to keep the ditch open and minimize impacts related to grading. This will require the steepening of side slopes for approximately 440 m (1,444 ft) associated with the traffic signal alternative. The installation of guardrail may also be required as a safety measure along all sections with steepened slopes.

### *Roundabout Alternatives*

To minimize impacts:

- Replace the standard 6-to-1 (horizontal to vertical) side slope with a steeper side slope where the ditch is not in culvert in order to keep the ditch open and minimize impacts related to grading. This will require the steepening of side slopes for approximately 275 m (902 ft) associated with the roundabout alternatives. The installation of guardrail may also be required as a safety measure along sections with steepened slopes.

## **3.3.8 Noise**

Noise is defined as unwanted or excessive sound and has been identified by the federal government as an undesirable by-product that can be annoying; interfere with sleep, work, or recreation; and in extremes cause physical and psychological damage. Sound is quantified by a unit of measure called a decibel (dB). For highway traffic noise, high- and low-pitched sounds are adjusted or weighted to approximate the way that an average person hears sounds. The adjusted sounds are called "A-weighted levels" (dBA). The A-weighted decibel scale begins at zero, which represents the faintest sound that can be heard by humans with very good hearing. The loudness of sounds (that is, how loud they seem to humans) varies from person to person, so there is no precise definition of loudness.

Roadway noise is not constant because noise levels change with the number, type, and speed of vehicles. Therefore, although noise levels are measured in dBA, they are reported in the average noise level energy over one hour (Leq(h)). Leq(h) represents a constant, average sound level, and FHWA uses the Leq(h) as the acceptable noise descriptor for highway transportation projects,

The level of roadway traffic noise depends on: (1) the volume of the traffic, (2) the speed of the traffic, and (3) the types of vehicles in the flow of traffic (FHWA, 1992). Generally, the loudness of traffic noise is increased by heavier traffic volumes, higher speeds, and greater numbers of trucks. As a person moves away from a highway, traffic noise levels are buffered by distance, terrain, vegetation, and natural and manmade obstacles.

The traffic noise study for the Shiloh Road Corridor project was conducted by Big Sky Acoustics, LLC. according to FHWA regulations in 23 CFR Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise, and MDT's *Traffic Noise Analysis and Abatement: Policy and Procedure Manual* (June 2001). FHWA regulations require the following during the planning and design of a highway project: (1) identification of traffic noise impacts, (2) examination of potential mitigation measures, (3) the incorporation of reasonable and feasible noise mitigation measures into the highway project, and (4) coordination with local officials to provide helpful information on compatible land use planning and control. The FHWA regulations and MDT policy state that traffic noise impacts occur for roadway projects when the predicted Leq(h) noise levels at a receptor's

location in a project's design year approach or exceed the noise abatement criteria (NAC) values for different types of land uses and human activities. NAC criteria are categorized in five activity categories A through E, as shown in Table 3.21. Because MDT typically does not provide noise abatement for Activity Category C land uses and no Category A land uses were identified in the corridor, only Activity Category B receptors were analyzed in detail for this project.

**Table 3.21 Noise Abatement Criteria**

Activity Category	Acceptable Levels (L <sub>eq</sub> (h))	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

-- No standard (no receptor)

Source: Federal Register, Volume 47, No. 131, July 8, 1982, Rules and Regulations

FHWA regulations and MDT policy require reasonable and feasible efforts to provide noise mitigation when the criteria are approached or exceeded. However, FHWA regulations and MDT policy do not require the NAC be met in every instance. Compliance with the noise regulations is a prerequisite for granting federally-funded highway construction or reconstruction projects.

The noise analysis is summarized in a report entitled Revision 1 Shiloh Road Corridor Study, Traffic Noise Study. That report, which is on file with MDT, includes detailed information regarding noise assessment methodology, results, federal rules, and MDT noise policies.

## Impacts

Short-term impacts associated with construction are addressed in Section 3.5.

Noise sensitive receptors were identified within approximately 150 m (492 ft) of the existing Shiloh Road centerline using United States Geological Survey (USGS) aerial photographs and site observations. Receptor locations include single-family residences, apartment buildings, mobile homes, townhomes, assisted living facilities, planned or proposed residential developments, churches, parks, schools, and a zoo, as shown in Figures 1 and 2 in Appendix E. Traffic noise level impacts were evaluated for existing conditions (2002) and predicted conditions for the design year (2027) for all alternatives (Table 3.22).

The FHWA-approved Traffic Noise Model (TNM) Version 2.5 software was used to predict existing and future traffic noise levels at the receptors. For the signalized alternatives, it was assumed that all traffic signals on Shiloh Road were green, in order to approximate free-flowing traffic (i.e., worst-case traffic noise) at the receptors at the posted speed limit. For the roundabout alternatives, it was

assumed that traffic was either slowing down or accelerating within approximately 140 m (495 ft) of a roundabout, and that traffic moved through the roundabout at 40 km/h (25 mph). Otherwise, traffic on Shiloh Road was assumed to be traveling at the posted speed limit. The traffic volumes in the corridor and the noise levels for each receptor in the corridor are identified in Appendix E. Currently, no receptors in the corridor have a predicted noise level that meets the NAC criteria for the base year (2002).

According to MDT policy, traffic noise impacts for activities in Category B occur in two situations:

- If predicted Leq(h) traffic noise levels “approach or exceed” the 67 dBA NAC in the project design year (2027) for the build alternatives, or
- If the predicted Leq(h) noise levels in the design year (2027) for the build alternatives “substantially exceed” the noise levels in the present year (2002) of the project for the No Build Alternative.

**Table 3.22 Noise Impacts by Alternative for 2027**

	<b>No Build Alternative</b>	<b>Traffic Signals at Arterials Alternative</b>	<b>Roundabouts at Arterials Alternative</b>	<b>Traffic Signals at Arterials and Major Development Alternative</b>	<b>Roundabouts at Arterials and Major Development Alternative</b>
Predicted Noise Level Increase (2002 – 2027)	3 - 6 dBA	3 -10 dBA	3 -10 dBA	3 -10 dBA	3 -10 dBA
Impacted Receptor Locations <sup>1</sup>	19 (due to projected traffic volume increases)	27	27	27	24
Facilities at the Impacted Receptor Locations	16 single-family residences 5 planned or proposed developments 12 town home buildings <sup>2</sup> 4 assisted-living buildings 5 apartment buildings 30 mobile home residences	22 single-family residences 5 planned or proposed developments 18 town home buildings <sup>2</sup> 4 assisted-living buildings 5 apartment buildings 2 park areas 30 mobile home residences 1 church 1 college	Same impacts as Traffic Signals at Arterials Alternative <sup>2,3</sup>	Same impacts as Traffic Signals at Arterials Alternative <sup>2</sup>	21 single-family residences <sup>3</sup> 5 planned or proposed developments 18 town home buildings <sup>2</sup> 4 assisted-living buildings 5 apartment buildings 30 mobile home residences 1 church 1 college

<sup>1</sup> Category B receptor locations that would meet or exceed the MDT noise impact criteria of 66 dBA.

<sup>2</sup> Preliminary design indicates that three of the town home buildings have ROW impacts and would be relocated or acquired as a consequence. However, ROW design would be refined in the final design phase in order to reduce or eliminate the need for relocations and acquisitions.

<sup>3</sup> Preliminary design indicates that one single-family residence has ROW impacts and would be relocated or acquired as a consequence. However, ROW design would be refined in the final design phase in order to reduce or eliminate the need for relocations and acquisitions.

MDT defines “approach” as 1 dBA less than the NAC of 67 dBA for category B uses, and “substantially exceed” as 13 dBA. Therefore, the traffic noise impact criteria is 66 dBA or greater in the design year of a project, or 13 dBA or greater than the present year noise levels. Various guides and policies regarding noise and its mitigation do not pertain to impacts to land values. The guidelines are merely an administrative guide as to potential abatement, and they are not a way to properly determine monetary values in regard to noise impacts to real properties.

Traffic noise levels at 33 receptor locations were modeled for each alternative for the design year, 2027. Figures 1 and 2 in Appendix E show receptor locations. Tables of predicted noise levels at those receptors are shown in Tables 1 and 2 in Appendix E. However, changes to the proposed ROW are anticipated during the final design of the preferred alternative to reduce the need for relocations and acquisitions. Receptor locations where relocations or acquisitions could occur are noted as such in Appendix E.

## **Mitigation**

If traffic noise impacts are predicted, abatement measures must be assessed to determine if they are reasonable and feasible. Potential abatement measures include modifying proposed build alternative designs; constructing noise barriers or berms; employing traffic management measures such as reducing speed the speed limit; restricting access of certain vehicle types; using quiet pavements; and incorporating noise-compatible and/or noise-mitigated development concepts on planned or proposed properties. Barriers typically provide the highest level of noise reduction of these mitigation measures.

According to MDT policy, any abatement measure used to reduce the traffic noise at a receptor must first be considered reasonable and feasible. The Noise Abatement Checklist included in MDT’s policy helps determine if an abatement measure would be considered reasonable and feasible. Since traffic noise impacts for Shiloh Road are predicted, noise abatement measures were evaluated.

To determine if a mitigation measure is feasible, it must provide a minimum 6-dBA reduction in noise levels at residences located closest to the highway, and must not represent a safety hazard to vehicles traveling on the highway or to the residents of the homes. To determine if a mitigation measure is reasonable involves more subjective factors, including the comparison of the noise levels associated with the No Build Alternative to those associated with the build alternatives, the cost of abatement, the timing of the development, and the opinion and acceptance of impacted residents regarding the noise abatement measure.

Another factor in determining if an abatement measure is reasonable is the comparison of design year noise levels. MDT has determined that if the predicted noise levels for a build alternative in the design year of a project exceed the noise levels in the design year for the No Build Alternative by 3 dBA or more at an impacted receptor, the abatement may be considered reasonable. Since the design year (2027) noise levels of the build alternatives at impacted receptor locations exceed the No Build Alternative by 0 to 4 dBA, this section of MDT’s reasonableness criteria would be met at only some of the impacted receptors.

The following potential abatement measures were assessed to determine if they would be reasonable and feasible.

## **Design Modifications**

Shifting the alignment of the build alternatives to reduce traffic noise impacts is not a reasonable or feasible abatement measure because of existing and proposed development on both sides of Shiloh

Road. An alignment shift of this magnitude 40 to 60 m (131 to 197 ft from a receptor) could cause additional ROW acquisition, the removal of structures, and an increased impact to wetlands.

### ***Traffic Management***

Restricting certain vehicle types, like heavy trucks, from Shiloh Road, or limiting the time of day certain vehicles may use the road is not a feasible mitigation measure. Shiloh Road is classified as a principal arterial in the long range improvements recommended in the *Billings Urban Area 2005 Transportation Plan* and is part of MDT's Urban Highway System. One of the system's main functions is to provide efficient transportation routes through urban areas and travel by domestic and international freight carriers might be inhibited through restrictions on vehicle types on Shiloh Road. Reducing the speed limit could be a reasonable and feasible noise mitigation measure if such a measure would result in an actual reduction of driver speeds and would not hinder the function of the principal arterial. However, reducing the posted speed limit does not necessarily result in a reduction of actual driver speeds (FHWA, 1992). Even if actual driver speeds were reduced from 45 mph (72 km/h) to 40 mph (64 km/h), the predicted traffic noise levels would only be reduced by approximately 1 dBA. This would only eliminate the impact at three of the 19 impacted receptors for the No Build Alternative; two of the 27 impacted receptors for the Traffic Signals at Arterials Alternative; five of the 27 impacted receptors for the Roundabouts at Arterials Alternative; three of 27 impacted receptors for the Traffic Signals at Arterials and Major Development Alternative; and three of the 24 impacted receptors for the Roundabouts at Arterials and Major Development Alternative.

### ***Barriers and Berms***

Construction of barriers or berms is not a feasible mitigation measure for this project. A barrier is most effective when it is continuous and solid and it blocks the direct line-of-sight between the roadway and a receptor. In general, the length of an effective barrier has to be a minimum of four times the distance from the receptor to the barrier. In certain locations the driveways and cross-streets that intersect Shiloh Road would prohibit the construction of barriers that would be long enough to be effective. MDT uses a cost effectiveness index (CEI) to determine if a barrier is reasonable. As discussed in the Revision 1 Shiloh Road Corridor Study, Traffic Noise Study, the CEI values associated with different barrier configurations at impacted receptors exceed MDT's criteria for what is considered reasonable for barrier construction. Therefore, barrier construction for this project is not a reasonable noise mitigation measure.

### ***Pavement***

Studies have shown that open-graded asphalt or rubberized asphalt can reduce traffic noise; however the noise reduction benefits decline with age and surfaces may not withstand winter freeze/thaw conditions. The predicted levels in the design year likely would not be substantially reduced. Therefore, such a material is not a reasonable noise mitigation measure.

### ***Land Use Planning***

Noise impacts to proposed and planned development along Shiloh Road could be avoided if development maintains a minimum distance between the roadway centerline and a new residence, found to be 40 to 60 m (131 to 197 ft). The inclusion of noise-compatible development including providing green space between residences and the roadway could limit future noise impacts to planned and proposed properties.

## **Summary**

No feasible or reasonable noise mitigation was identified for existing receptors. To minimize traffic noise impacts at planned or proposed developments within the project area, noise-compatible land uses and/or noise mitigation measures would need to be incorporated into the future development. MDT will provide the Revision 1 Shiloh Road Corridor Study, Traffic Noise Study to the City and County Planning Department for their consideration in land use planning and reviewing development proposals.

### **3.3.9 Contaminated Sites/Hazardous Materials**

An initial site assessment (ISA) of the Shiloh Road project corridor was conducted in 2005 by Terracon. The ISA consisted of discussions with local agencies; review of Montana Department of Environmental Quality (MDEQ) databases; review of City Directories and hydrogeology reports; visual review of aerial photography from 1957, 1996, and 2002; and site visits. The ISA determined that the ROW and immediate area of the project corridor does not include any national or state Superfund sites, leaking underground storage tanks (LUSTs), licensed landfills, abandoned mine reclamation sites, hazardous spill sites, or point source discharge locations. Within the project area, there are potential hazardous material sites as described below.

#### **Hogan's Slough Bridge**

The bridge over Hogan's Slough (Refer to Environmental Overview Maps in Appendix A), which was constructed in 1977, is constructed of unpainted and treated timber girders, planks, and posts. According to officials at the City of Billings, MT Solid Waste Division, no chemical analysis of treated timbers that are more than 10-15 years old is required for disposal in Class II or Class IV landfills. Because the timbers in the bridge over Hogan's Slough are approximately 30 years old, they could be disposed of at the Class II City of Billings Landfill if they are reduced to five foot or smaller sections.

#### **Underground Storage Tanks and Contaminated Material and Soil**

There are three USTs connected to gas stations located near the project area, all of which are relatively new and have no history of leaking petroleum products. The project corridor is a previously disturbed area; as a result, the possibility for encountering contaminated materials and/or soils exists. For example, fill material that was wasted adjacent to Shiloh Road in the construction of the Shiloh Drain is suspect. However, initial investigations have shown that surface of the fill generally appears to be clean, natural material with no evidence of petroleum spills or other contamination. Other potential sources of soil contamination could include past storage, handling, and disposal methods of petroleum products, herbicides, pesticides, or septic systems associated with current or former residences/farmsteads. Existing buildings in the corridor may include asbestos containing materials (ACMs).

## **Impacts**

### **No Build Alternative**

There would be no impact to potentially contaminated sites or hazardous material.

### **Build Alternatives**

The bridge over Hogan's Slough would be removed under all of the build alternatives and its timbers may require special care in handling and disposal. The USTs associated with the Exxon retail gas



station are currently within the proposed ROW for the Traffic Signals at Arterials Alternative, and Traffic Signals or Roundabouts at Arterials and Major Development Alternative; however, design exceptions are currently being considered that would remove the proposed ROW from the UST site. No USTs are currently within the proposed ROW for the Roundabouts at Arterials Alternative. If the final design for the project is found to encroach into UST sites, then additional review would be required.

The build alternatives may require removal or relocation of structures and/or excavation in proximity to current or former residences and farmsteads or fill that was excavated for the Shiloh Drain. Those previously disturbed areas could have soil contamination or ACMs.

### **Mitigation**

Hogan's Slough bridge materials will be salvaged or disposed of in accordance with applicable laws and regulations.

In accordance with MDT Standard Specifications, if contaminated soils or hazardous materials are encountered, excavation and disposal will be handled in compliance with applicable federal, state, and local regulations.

Structures identified for relocation or demolition will be inspected for asbestos. If regulated asbestos containing material is found, the materials will be removed according to state and federal regulations.

### **3.3.10 Farmlands**

The majority of land adjacent to the proposed project is used for agricultural purposes, predominantly grazing and cropland as previously described in the Land Use section. The 1981 Farmland Protection Policy Act (FPPA) requires that the effects of proposed highway projects be examined before any farmland is acquired. US Congressional Public Law 95-87 (Federal Register January 31, 1978: Part 657) requires the US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) to identify and map prime and important farmland. These farmlands are protected in accordance with the FPPA.

Prime farmlands are considered to be nationally important and have been identified as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, oilseed, and other agricultural crops with minimum inputs of resources, as determined by the Secretary of Agriculture. In addition to prime farmlands, the farmland program encourages the identification of farmland of statewide importance. Farmland of statewide importance is farmland that is of statewide or local importance for the production of food, feed, fiber, forage, and oilseed, as determined by the Secretary of Agriculture. Pursuant to the FPPA, an inventory of farmland in the study area has been completed. NRCS mapping indicates a total of 65,829 ha (162,667 ac) of "prime if irrigated" farmland within Yellowstone County. Another 125,542 ha (310,220 ac) are classified as "farmland of statewide importance." As illustrated in the Environmental Overview Maps (Appendix A), the existing Shiloh Road corridor traverses prime if irrigated farmland and farmland of statewide importance for approximately half of the length of the corridor.

### **Impacts**

The project area was inventoried using aerial photographs, the NRCS Yellowstone County Soil Survey, and site visits. The project area is defined as the area delineated for each build alternative. Potential impacts were determined using the difference between the existing ROW and the proposed

ROW for each alternative. The analysis of farmland impacts within MDT ROW for each alternative is presented in Table 3.23

It should be noted that this project also includes the construction of a multi-use path that would likely be maintained by the City of Billings if an easement or the right-of-way is transferred to the City. This path is proposed to parallel Shiloh Road from the entrance of ZooMontana (near the southern project limit) to Poly Drive (at the northern project limit). Between ZooMontana and Colton Boulevard, the path would parallel Shiloh Road on the west side and from Colton Boulevard to Poly Drive, the path would parallel Shiloh Road on the east side. The analysis of farmland impacts includes areas both inside and outside MDT ROW. The multi-use path would be located in the proposed MDT ROW for Shiloh Road in two locations in the corridor (the southern end and the northern end). From just south of King Avenue (at Montana Sapphire Drive) to Broadwater Avenue, it is likely that the multi-use path would not be in MDT ROW because the Shiloh Drain would separate the multi-use path from the roadway for most of this segment. The City has recently acquired the Shiloh Drain including the associated easements outside the drain. Therefore, the multi-use path in this location would be within the City's easement. For the build alternatives, the additional area not in MDT ROW for the multi-use path between Montana Sapphire Drive and Broadwater Avenue would amount to approximately 0.85 ha (2.10 ac) of land, some of which is designated as important farmland.

The FPPA definition of farmlands includes all areas in non-urban use. In addition to lands currently in crop production, this definition includes forested, idle, pasture, open, and recreational lands as well as unpaved roads, rural residences, and farm buildings. As is required by the FPPA, MDT has coordinated with the NRCS, and the FPPA Farmland Conversion Impact Rating forms (Form CPA-106) have been completed and approved by NRCS (see Appendix C). In order to complete the CPA-106 Form, the impacts to prime farmlands, farmlands of statewide importance, and site assessment criteria were calculated according to FPPA guidelines. Each alternative would result in less than 160 total points; therefore, under the provisions of 7 CFR.658.4(c)(2), no additional consideration for protection is necessary.

Information from the CPA-106 form was used as the basis for the following farmland impact analysis. Farmland impact is divided into direct and indirect impacts. Direct impacts include those areas that would be used for road construction and ROW acquisition and would result in the creation of non-farmable land. Indirect impacts are impacts where land may become non-farmable because severance of parcels may restrict access and/or operations due to the size and shape of the parcel (i.e. creation of "remainder parcels"). No indirect impacts exist under any of the alternatives in the project area.

Table 3.23 summarizes estimated direct impacts to farmlands in MDT ROW for each alternative. In general, the roundabout intersection would have less of an impact on prime farmlands and farmlands of state importance than the signalized intersection because the roundabout intersection requires less ROW acquisition.

**Table 3.23 Prime Farmlands and Farmlands of State Importance Impacts by Alternative in MDT ROW**

Alternative	No Build	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
Total impact on Prime Farmland (irrigated)	0 ha (0 ac)	2.05 ha (5.07ac)	1.88 ha (4.64 ac)	2.05 ha (5.07 ac)	2.02 ha (5.00 ac)
Total impact on Farmland of Statewide Importance	0 ha (0 ac)	1.31 ha (3.24 ac)	1.09 ha (2.69 ac)	1.32 ha (3.26 ac)	1.13 ha (2.79 ac)
<b>Total Direct Impacts on Farmland</b>	<b>0 ha (0 ac)</b>	<b>3.36 ha (8.31 ac)</b>	<b>2.97 ha (7.33 ac)</b>	<b>3.37 ha (8.32 ac)</b>	<b>3.15 ha (7.79 ac)</b>

Source: David Evans and Associates, Inc. GIS Analysis, July 2006

### Mitigation

This project will not have a substantial impact to prime and statewide important farmlands. Because all alternatives received total point values of less than 160 points on the CPA-106 form, no mitigation is required. ROW acquisition would comply with the FHWA and MDT standard procedures for land-acquisition (see Section 3.3.4).

### 3.3.11 Irrigation

The potential impacts of the Shiloh Road Corridor project to irrigation facilities throughout the project corridor were studied and are documented in the Irrigation Report for the Shiloh Road Corridor (Engineering, Inc., 2005). The following information was summarized from that report.

Irrigated agricultural properties are serviced through a network of canals and ditches fed by the Yellowstone River. There are three major irrigation canals and one major distribution ditch within the study area. These include the BBWA Canal, Canyon Creek Ditch canal, Big Ditch canal, and Snow Ditch, which is a distribution ditch of the Big Ditch canal (see Appendix A). In addition, several other smaller canals are being used or have been used to provide irrigation water to entities within or adjacent to the Shiloh Road corridor. Along with irrigation ditches, some ditches have been constructed along the Shiloh Road corridor to serve as irrigation wastewater collectors. These ditches serve the dual purpose of assisting with the mitigation of storm water on Shiloh Road.

This distribution system of canals and ditches provides irrigation water to approximately 23,573 ha (58,250 ac) in the Billings area. Adjacent to the Shiloh Road project corridor, it is estimated that farmers and ranchers use the distribution system of canals for irrigation of approximately 149 ha (368 ac) on 25 parcels. The following is a more detailed description of the irrigation facilities in the project area.

### Canyon Creek Ditch

The Canyon Creek Ditch, which was constructed by the Canyon Creek Ditch Company in 1883, crosses Shiloh Road just north of Zoo Drive. The canal provides irrigation water to several agricultural properties in the southern portion of the Shiloh Road project corridor and is used to irrigate approximately 2,954 hectares (7,300 acres) of land in southwest Billings.

## **BBWA Canal**

The BBWA Canal crosses Shiloh Road just south of Hesper Road and is the largest irrigation canal that crosses the corridor within the project limits. The BBWA, which was formed in 1915, has rights to withdraw a maximum of 17.0 m<sup>3</sup>/s (600 cfs) from the Yellowstone River to accommodate irrigation demands. Currently, the canal is used to irrigate 9,712 hectares (24,000 acres) of land throughout the Billings area including cropland and several golf courses in West Billings and Billings Heights.

## **Snow Ditch**

The Snow Ditch, which is one of the primary distribution canals of the Big Ditch canal, crosses Shiloh Road just south of Central Avenue.

## **Big Ditch Canal**

The Big Ditch, which was built by the Big Ditch Company between 1882 and 1883, crosses Shiloh Road just south of Corbin Drive. The canal was built to provide irrigation water for both farming and residential purposes and provides irrigation water to several entities in the areas north and west of the Shiloh Road project corridor.

## **Other Irrigation Canals**

Currently, several other canals are being used or have been used to provide irrigation water to entities within or adjacent to the Shiloh Road project corridor. Several small ditches provide irrigation water to agricultural fields throughout the corridor using diversion structures from the BBWA, Big Ditch, and Canyon Creek Ditch canals. The irrigation report documents 35 irrigation pipes, which cross Shiloh Road within the project limits, 24 of which are currently in use. These structures function as either distribution channels or wastewater ditches. The most notable of these is the Shiloh Drain ditch, which parallels Shiloh Road from Broadwater Avenue to south of King Avenue. This ditch serves primarily as an agriculture drain and an irrigation wastewater collection drain, but also functions as a storm water collection facility.

## **Impacts**

### ***No Build Alternative***

There would be no impacts to irrigation systems.

### ***Build Alternatives***

Short-term impacts associated with construction are addressed in Section 3.5.

For all build alternatives, irrigation systems could be impacted in a number of ways, including realignment, replacement of conveyance mechanisms and appurtenances, ditch relocations, and ditch terminations. Terminating existing irrigation ditches that are no longer used or that serve parcels planned for commercial development would be evaluated in the final design stage of this project. Existing major irrigation canals, including BBWA Canal, Big Ditch, and Canyon Creek Ditch, would be perpetuated under all of the build alternatives.

The Canyon Creek Ditch crossing of Shiloh Road is in poor condition and is recommended for reconstruction as part of this project. The culvert would be replaced and extended, as necessary, to accommodate roadway widening and guardrail replacement.

Because the bridge crossing of the BBWA Canal at Shiloh Road was reconstructed in 2000, the structure is wide enough to accommodate a large typical section and multiple lanes of traffic. It is anticipated that this structure would not need to be reconstructed as part of this project. However, a new bridge would be required directly west of the existing bridge to accommodate the proposed multi-use path. BBWA would require that the canal be lined with concrete underneath the new bridge and approximately 3 m (10 ft) upstream and downstream of the bridge for maintenance reasons. This action would not affect the function or capacity of the canal. Refer to Section 3.3.7 for more specific information on impacts on BBWA Canal.

The Big Ditch Company intends to abandon the section of Snow Ditch east of Shiloh Road and divert the water into the Shiloh Drain which is owned by the City. Water would continue to be conveyed under Shiloh Road near this location to provide irrigation water for the Shiloh Village Mobile Home Park on the east side of Shiloh Road south of Central Avenue. Snow Ditch would be affected by all build alternatives. Some portions of the ditch could be impacted through installation of new culvert and placement of guardrail. In addition, a diversion structure, head gate, and small pumphouse would require relocation from their current locations. These actions would not affect the function or capacity of the canal. Refer to Section 3.3.7 for more specific information on impacts on Snow Ditch.

The Big Ditch would not be affected by any of the build alternatives. The Big Ditch was put into culvert near Shiloh Road to install a pedestrian underpass in 2000. The ditch goes into culvert 75 m (246 ft) west of Shiloh Road and comes out of culvert 88 m (289 ft) east of Shiloh Road. The exposed areas of the ditch are well beyond the construction and ROW limits of this project.

### **Mitigation**

Canals and ditches will be relocated as necessary in consultation with owners to minimize impacts. As appropriate, removal of ditches will be done during construction of new roadway and will include removal of concrete headgates, pipes, and structures. New facilities will be located outside proposed project ROW. For canal maintenance purposes, BBWA Canal will be lined with concrete underneath the proposed bridge for the multi-use path and approximately 3 m (10 ft) upstream and downstream of the bridge.

Refer to Section 3.3.7 for additional mitigation for the BBWA Canal and Snow Ditch.

### **3.3.12 Visual Resources**

Shiloh Road was designated as a Community Entryway Corridor in the *West Billings Plan*, which identified goals and recommendations for the aesthetics of the corridor (refer to Section 2.1.1). Visual and scenic issues are also addressed in the *Northwest Shiloh Area Plan*, which aims to create visually appealing and accessible communities by defining and establishing a distinctive character for the Shiloh area. In addition, the South Shiloh Corridor Overlay District (City of Billings Ordinance No. 05-5314) establishes a zoning district intended to promote an aesthetically pleasing and distinct entryway corridor by encouraging abundant landscaping, attractive building design, and preservation of scenic vistas from King Avenue south to the I-90 interchange. The overlay district establishes specific development and landscaping standards for industrial, commercial, and mixed-use development as called for in the *West Billings Plan*. In order to address these issues in the corridor, a Visual Resources Report (EDAW, 2005) was prepared and is on file with MDT. The visual assessment documented in the report follows FHWA's recommended guidelines described in the Visual Impact Assessment for Highway Projects (FHWA-HI-88-054). Refer to this document for a detailed description of visual resources throughout the Shiloh Road corridor.

Landforms and vegetation are the dominant landscape features in the project area. The Rimrocks' ridgeline, a cliff protruding hundreds of feet from the valley floor, is located approximately 457 m (1,500 ft) north of Rimrock Road at the north end of Shiloh Road and is the dominant landscape feature visible throughout the project area. Other major landscape features include the large, open, flat tracts of agricultural land still existing along Shiloh Road, giving the corridor a rural, agricultural character. Suburban development is occurring along most of the Shiloh Road corridor; recent commercial and residential developments (particularly at Grand Avenue) contrast with the once uniform rural and agrarian character of the area, which included scattered residences, farm-related structures, and residences directly fronting Shiloh Road. A majority of the new residential development occurs along the existing corridor in typical, large subdivisions with single entry access points on Shiloh Road. Other major features within the landscape include the Shiloh Drain, Canyon Creek, BBWA Canal, the JTL gravel mining operation and JTL pond (detains groundwater pumped from mining operation), and Hogan's Slough.

There are a few resources in the project area that may be classified as visually sensitive. The most noticeable of these is the view of the Rimrocks north of Shiloh Road. Surrounding mountain ranges, such as the Pryor and Beartooth, are visible in the far distance. In addition, mature vegetation associated with natural and man-made drainages or agricultural properties provides the only other natural, vertical, visual element within this relatively flat landscape. The undeveloped character of the agrarian landscape along much of the central and southern Shiloh Road corridor is also a visual resource to be recognized. The large ponds created by the gravel mining operations occurring on the southern portion of Shiloh Road have the potential to become a sensitive resource due to the lack of other water along the road.

There are two primary view points that are considered in this analysis: viewers of the road and viewers from the road. Viewers from the road include local residents, commuters, commercial traffic, and tourists. Viewers of the road include local residents, commercial neighbors, and tourists/recreationists. The existing visual quality from the road for the entire study area is considered low-to-moderate. This is largely attributed to the amount of modification that has occurred to the natural landscape from residential, commercial, and industrial development and encroachments typically associated with this type of suburban development. The existing visual quality of the road is also considered low-to-moderate. This is largely the result of visual encroachments including inharmonious development, fencing, weeds, power lines, ditches, and erosion. Also, there are few prominent landscape features, such as landforms, water, or vegetation that exist along or in proximity to the road (with the exception of the Rimrocks to the north).

## Impacts

The assessment of visual quality was based on the merits of three independent criteria: landscape unity, intactness, and vividness. The visual quality ratings for each viewpoint (from the road and of the road) range between one and seven. Seven is considered the highest quality rating possible under FHWA guidelines.

The build alternatives vary from the No Build Alternative in two respects: (1) the road design would be wider and have more travel lanes proposed north of Zoo Drive and (2) the build alternatives would change the physical appearance of the landscape, with the roadway becoming a more dominant element.

Visual quality from the road is largely affected by development outside of the ROW, which is unrelated to the proposed improvements of this project. The visual quality of the area surrounding the project corridor could either be substantially reduced or enhanced depending on whether or not appropriate corridor development regulations have been developed and are being followed. As

discussed above, the City and County have developed plans, policies, and ordinances to guide the development of the corridor. The policies in the plans were considered in the design of the build alternatives in order to preserve and enhance the overall character and visual quality of the project area.

### **No Build Alternative**

The No Build Alternative would have no impacts on the visual resources in the project area. Visual quality both from and of the road would continue to be low-to-moderate. This visual quality of this alternative would be similar to the build alternatives, but would have slightly less visual quality based on a viewpoint from the road. As discussed previously, this is largely the result of visual encroachment and few prominent landscape features.

### **Build Alternatives**

Short-term impacts associated with construction are addressed in Section 3.5.

All of the build alternatives are within the low-to-moderate visual quality range for both viewpoints assessed (of the road and from the road). Visual quality from the road would be slightly higher under the build alternatives than the No Build Alternative. The organized and consistent treatment of road shoulders and adjacent ROW with elements such as overhead utilities, signage, vegetation, and lighting would improve aesthetics in the corridor. Curbs on the median and along each shoulder provide additional visual improvements (unity and intactness) within the roadway landscape. These improvements were considered enough to offset the impacts of the removal of mature trees in certain locations and the addition of traffic signals at major intersections, which could impede views of the Rimrocks. Overhead power lines and adjacent residential and commercial development would continue to detrimentally impact the visual quality of the study area. When considering the visual quality of the road, the improvements discussed above were also considered enough to offset the impacts of removing mature vegetation and would improve the overall visual quality of the road over existing conditions.

Visual quality under the Traffic Signals at Arterials and Major Development Alternative would be slightly lower than the Traffic Signals at Arterials Alternative due to four additional signalized intersections potentially impeding views of the Rimrocks. The impacts of the roundabout alternatives would be similar to those of the traffic signals alternatives, except at the major intersections where improvements are proposed. Roundabouts would not have traffic signals, so the potential for impediment of Rimrock views would not be an issue. Additionally, the median in the center of a roundabout offers additional opportunities for landscaping and public art. Therefore, the overall visual quality under the roundabout alternatives would be slightly higher than under the No Build Alternative or the traffic signals alternatives.

### **Mitigation**

There are no adverse visual impacts that would result from any of the build alternatives. Therefore, mitigation would not be required.

## **3.4 EFFECTS ON THE NATURAL AND PHYSICAL ENVIRONMENT**

This section describes existing conditions for the natural and physical environment in the Shiloh Road corridor between the Canyon Creek Bridge (RP 4.75) and Poly Drive (RP 0.25).

### 3.4.1 Floodplains (EO 11988)

EO 11988, Floodplain Management, requires federal agencies to avoid direct or indirect support of floodplain development whenever a practicable alternative exists. EO 11988 and 23 CFR 650 Part A require an evaluation of project alternatives to determine the extent of any encroachment into the base floodplain. The base flood (100-year flood) is the regulatory standard used by federal agencies and most states to administer floodplain management programs. A “floodplain” is defined as lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, with a one percent or greater chance of flooding in a given year. As described in FHWA’s floodplain regulation (23 CFR 650 Part A), floodplains provide natural and beneficial values serving as areas for fish, wildlife, plants, open space, natural flood moderation, water quality maintenance, and groundwater recharge.

There are no 100-year floodplains delineated by the Federal Emergency Management Agency (FEMA) within the study area. FEMA has delineated a 100-year floodplain for Canyon Creek just below the southern project limits, as illustrated in the Environmental Overview Maps in Appendix A. FEMA has also indicated a Zone D designation for a 2,570 ha (6,360 ac) area on the west side of Shiloh Road extending from just below King Avenue north to Rimrock Drive. According to FEMA, the Zone D designation indicates an area of potential but undetermined flood hazards. Despite the lack of regulatory floodplains in the project area, hydraulic issues were identified by MDT technical staff, agency representatives, and members of the community. These issues are related to a major flooding event, estimated to be a 500-year to 1,000-year storm, which occurred in 1937 when combined flows of Canyon Creek and Hogan’s Slough crossed Shiloh Road in several locations. At the time of flooding, Shiloh Road was an oiled gravel road and remained as such until its construction as a paved facility in 1956. Flooding extended into downtown Billings primarily due to debris clogging a railroad crossing northwest of Shiloh Road and excessive storm water flows in Hogan’s Slough and Canyon Creek. There have been considerable improvements to the railroad and highway crossings, additional irrigation facilities and land grading (ditches, etc), roads constructed and elevated, and other physical changes to the drainage area since the 1937 event. According to historical records and interviews with property owners in the area (see Appendix B for Engineering, Inc. letter to MDT dated November 10, 2005) there has been no flooding or roadway overtopping in the project area since the 1937 event.

Three previous studies were used as background for the current study of hydraulic and hydrologic conditions for the Shiloh Road Corridor project. The US Army Corps of Engineers (COE) Omaha District conducted a study (1970) and determined that Hogan’s Slough is not capable of conveying significant flood flows and provided a series of recommendations for improvement. The *Billings West End Storm Drainage Master Plan* (WEMP), prepared by Engineering, Inc. for the City of Billings in 1991, is the primary hydrologic reference used for the current Shiloh Road Corridor project. The hydraulic and hydrologic modeling associated with the WEMP also shows significant flooding risk along Hogan’s Slough at Shiloh Road under existing (1991) conditions, with more severe conditions following future development. The third report was conducted by HKM Engineering, Inc. (Draft, 1996) and focused on facility improvements on Hogan’s Slough. The report recommended re-sizing of various hydraulic features based on the data presented in the WEMP. For the Shiloh Road Corridor project, Ayres Associates completed a hydraulic analysis of existing conditions along Hogan’s Slough and provide recommendations for mitigation efforts. Three storms (2-, 10-, and 100-year events) were modeled in the current study using a 1-dimensional hydraulic model in HEC-RAS to simulate the dynamic condition of a 24-hour storm on Hogan’s Slough. Existing flooding conditions were developed as a baseline for comparison with proposed improvements. Future conditions hydrology, assuming full development west of Shiloh Road, was obtained from WEMP as boundary conditions for the model. Although the results of this modeling effort indicated that there would be overtopping



of Shiloh Road under all storm conditions, the report further states that there is a lack of data in undertaking this analysis.

Since Shiloh Road's construction in 1956, there have been several large storm events including events in 1958, 1978, 1996, and 2001. Shiloh Road has not been determined to have overtopped as result of an event since the 1937 storm. As a part of the Shiloh Road Corridor project, Engineering, Inc. interviewed several long-time residents, adjacent landowners, and the BBWA superintendent, all of whom could recall no overtopping or flooding at Shiloh Road since the 1937 event. Yellowstone County maintenance records also confirmed the conclusion that there has been no recorded flooding since 1937. This historic research indicates that the hydraulic data utilized in all analyses is old and contains insufficient topographic detail, leading to inaccurate results in the modeling that are not supported by historic evidence. The City and County recognize that this hydrologic data needs to be updated to provide a more accurate prediction of potential flooding events. Therefore, the city has secured a consultant to undertake a broad topographic mapping study and hydraulic analysis, with draft results anticipated in early 2007.

## **Impacts**

### ***No Build Alternative***

There would be no impact to floodplains.

### ***Build Alternatives***

No floodplain has been delineated by FEMA within the project limits, so no direct impacts would occur to a regulatory floodplain. Improvements to the Shiloh Road corridor that would be undertaken in the build alternatives would not exacerbate the existing flooding potential. The existing vertical road profile would be maintained in the area where Hogan's Slough intersects with Shiloh Road in order to prevent any net change in the flow characteristics of Hogan's Slough from current conditions. The existing timber bridge structure crossing Hogan's Slough would be replaced in conjunction with improvements to the corridor. Improvements to the Shiloh Road corridor would be conducted so that there is no net change to existing hydrologic and hydraulic conditions and existing flooding potential would remain unchanged at this location.

Since no 100-year floodplain has been designated in this project area, there would be no impact to a regulatory floodplain. There would be encroachments to the area along Shiloh Road designated Zone D. Since the area is of undetermined flood risks, no specific impacts can be assessed, nor is any mitigation or permitting required.

## **Mitigation**

No mitigation is required.

### **3.4.2 Water Resources/Quality**

#### **Surface Water**

Section 303(d) of the Federal Clean Water Act (CWA) and related regulations requires states to assess the condition of their waters to determine where water quality is impaired (does not fully meet standards) or threatened (is likely to violate standards in the near future). The result of this review is the 303(d) list, which must be submitted to the EPA every other year. Section 303(d) also requires states to prioritize and target water bodies on their list for development of water quality improvement

strategies (i.e. total maximum daily loads [TMDL]), and to develop such strategies for impaired and threatened waters.

Canyon Creek is the only water body in the study area listed in the Section 303(d) 2004 report. Canyon Creek flows under Shiloh Road just outside of the southern project limit and reaches the confluence with the Yellowstone River approximately 2.3 km (+/- 1.4 mi) southeast of the southern project limit. The Yellowstone River is also listed in the 2004 report, but is outside the study area. Both of these water bodies have been listed continuously since 1996.

The 2004 Report identified the following probably impaired uses, causes, and sources for Canyon Creek:

- Probable Impaired Uses: aquatic life support; cold water fishery-trout
- Probable Causes: flow alteration
- Probable Sources: hydromodification, flow regulation/modification

Other water bodies in the project area include Hogan's Slough, BBWA Canal, and Canyon Creek Ditch.

As documented in the Hydraulic Location Study Report (Ayres Associates, 2006), storm water drainage in the study area generally flows from north to south eventually reaching the Yellowstone River via Hogan's Slough. East of Shiloh Road, surface drainage is intercepted by the City storm water system, which eventually empties into the Yellowstone River via Hogan's Slough. On the west side of Shiloh Road, the majority of the surface drainage is carried south via the Shiloh Drain to Hogan's Slough. The surface drainage west of Shiloh Road and north of Grand Avenue is intercepted and flows via a storm drain trunkline into the Arnold Drain, which also connects to Hogan's Slough. There is no collection system for the surface drainage west of Shiloh Road and south of Hesper Road. These overland flows are minimal and are reabsorbed via infiltration (under normal conditions).

There are several agricultural ditches in the study area, the major ones being Canyon Creek Ditch, Snow Ditch, Big Ditch, Hi-Line Ditch, and Cove Ditch. Big Ditch, Snow Ditch, and Canyon Creek Ditch cross Shiloh Road within the project limits. There are also several other small ditches in the project area that provide irrigation water to agricultural fields throughout the corridor using diversion structures from the BBWA, Big Ditch, Snow Ditch, and Canyon Creek Ditch canals.

Along with irrigation ditches, some ditches have been constructed along the Shiloh Road corridor to serve as irrigation wastewater collectors. These ditches serve the dual purpose of assisting with mitigation of storm water on Shiloh Road. The Shiloh Drain is the most notable of these and runs along the west side of Shiloh Road from Broadwater Avenue south to Hogan's Slough. The Shiloh Drain is primarily an agriculture drain and an irrigation wastewater collection drain but also serves as a storm water collection facility.

The City of Billings issued the draft *Billings West End Storm Drainage Master Plan (WEMP)* in May of 1991. The WEMP, which was never finalized, documents the (1991) existing conditions for storm water drainage west of Shiloh Road and north of King Avenue. Shiloh Drain is an integral part of the WEMP for the Shiloh Road corridor and surrounding properties and is anticipated to be the primary source of storm water discharge for the study area. The WEMP proposes both interim and long-term drainage facilities for storm water conveyance related to the Shiloh Drain. The City has implemented the interim storm water conveyance system, as proposed in the WEMP, and has requested that this project be consistent with this system.

There are currently two bridge crossings in the project area. These crossings are described in detail in Section 3.4.3.

### **Groundwater**

According to the well data obtained from the Ground Water Information Center (GWIC), Montana Bureau of Mines and Geology, there are more than 500 wells located in the project area. These wells range in depth from 4.6 to 62.5 m (15 to 205 ft), but 94 percent of them are less than 30 m (100 ft) deep. The water depth below ground level at these wells ranges from 0 to 36.6 m (0 to 120 ft) and the average depth is 5.3 m (17.5 ft).

### **Public Water Supply**

Montana is required under 1996 amendments to the federal Safe Drinking Water Act to carry out a Source Water Assessment Program (SWAP). As part of the SWAP, public water supplies (PWSs) must prepare and submit source water protection plans (SWPP) to MDEQ for certification. There are ten PWSs in the study area. Seven of these are located between Broadwater Avenue and Grand Avenue, one is located at the New Life Assembly Church, and two are located along Canyon Creek west of Shiloh Road. None of these PWS's inventory areas or control zones (30-m [100-ft] buffer) are located within the potential construction limits or ROW of this project. The closest source is at ZooMontana and is 45 m (148 ft) outside of the MDT ROW. No sole-source aquifers are located near the project area.

### **Impacts**

#### ***No Build Alternative***

Under the No Build Alternative, there would be no physical reconstruction activities. However, because traffic is forecasted to increase and growth would also occur under the No Build Alternative there would be negligible impacts to water quality under this alternative from roadway pollutants and new development in the corridor.

#### ***Build Alternatives***

Short-term impacts associated with construction are addressed in Section 3.5.

Under all of the build alternatives, there would be no impacts to groundwater or public drinking water supply wells. There would be no construction activities occurring within any of the PWS inventory areas or control zones (30-m [100-ft] buffer). Other groundwater wells could be impacted if discovered during final design or construction, but at this stage, no wells are known to be within the potential construction or ROW limits of this project. Canyon Creek, which is listed on the 2004 Section 303(d) list, would not be directly impacted under the build alternatives. The indirect impacts identified (see discussion below) would not alter the flow in Canyon Creek, which was identified as the probable cause for impairment in the 2004 Section 303(d) Report.

Surface water quality impacts to water bodies and ditches in the corridor would occur under the build alternatives due to replacement of culverts and bridges, reconstruction of irrigation facilities, clearing of vegetation (especially riparian vegetation), and increased impervious surface from roadway widening. In-stream work would be required for the replacement and/or construction of new bridges and culverts, which can change water flows, sediment transport rates, sediment composition, and subsequent changes in pollutant loads, thermal fluctuations, and erosion. It is expected that the Hogan's Slough Bridge would be replaced with a box culvert; and the Snow Ditch culvert and Canyon Creek Ditch culvert would be replaced.

Clearing and vegetation removal in proximity to waterways could destabilize the banks and cause erosion. This could contribute to decreased water quality, increase sedimentation, and increased water temperatures. However, the waterways occurring in the project area have already been altered due to past construction activities.

Impervious surfaces prevent rainfall from percolating into the soil and increase the amount of storm water runoff. Rainfall and snowmelt produce runoff which can carry sediments, agricultural wastes, pesticides, fertilizers, heavy metals, hydrocarbons, road salts, and debris into waterways. Because the build alternatives would be constructed with an urban typical section, including curb and gutter, runoff would not be filtered prior to entering the waterways. Currently, the grassy roadside ditches that exist along Shiloh Road remove much of the pollutant load found in the runoff. Under the build alternatives the amount of impervious surface area in the corridor would increase over the No Build Alternative. However, the increase in impervious surface area from the build alternatives would be negligible when compared to the total amount of impervious surfaces in the project vicinity. Additionally, the contamination effects of the existing roadway have already been realized.

The impacts of storm water runoff under the Roundabouts at Arterials Alternative would be similar to the Traffic Signals at Arterials Alternative; however, this alternative would result in slightly less impervious surface at the seven intersections proposed for improvement because roundabouts do not require auxiliary turn lanes, which are included in the signalized intersection design. Increases in impervious surface would be the highest of all the build alternatives under the Traffic Signals at Arterials and Major Development Alternative due to the additional paved width required for auxiliary turn lanes at the 11 proposed signalized intersections. The Roundabouts at Arterials and Major Development Alternative would result in slightly less impervious surface than the Traffic Signals at Arterials and Major Development Alternative at the 11 intersections proposed for improvement because roundabouts do not require auxiliary turn lanes.

Under all of the build alternatives, roadway surface runoff would be collected via curb and gutter, curb inlets, and inlet piping for the majority of length of the project with the majority of runoff being conveyed either directly or indirectly to the Shiloh Drain and/or Hogan's Slough. The implementation of paved shoulders and segments of curb and gutter south of Hesper Road may require different collection system methods such as using adjacent vegetative area for filtration similar to the existing condition. This would be evaluated further in final design.

The City recently acquired the Shiloh Drain from the Shiloh Drainage District with the intent of utilizing the drain in accordance with the WEMP for storm water conveyance. The City anticipates utilizing the Shiloh Drain for regional detention by controlling flows at existing and proposed roadway crossings, so that flows into the Hogan's Slough near JTL can be controlled to minimize flood risks. The storm water facilities for the build alternatives were developed in consultation with the City and are consistent with the current interim storm water conveyance system for the Shiloh Drain, which was proposed in the WEMP and implemented by the City.

## Mitigation

All alternatives have been designed to minimize water quality impacts. All build alternatives will be in compliance with applicable permits and authorizations including CWA Section 404, Montana Stream Protection Act (SPA 124), and the General Permits for Storm Water Discharge Associated with Small Municipal Separate Storm Sewer System (MS4). The Storm Water Phase II Final Rule (December 8, 1999) requires operators of regulated small municipal separate storm sewer systems (MS4s) to obtain a National Pollutant Discharge Elimination System (NPDES) permit and develop a storm water management program designed to prevent harmful pollutants from being washed by storm water runoff into the MS4 (or from being dumped directly into the MS4) and then discharged from the

MS4 into local waterbodies. The City of Billings and Yellowstone County are both designated as MS4s that are required to obtain coverage under an MPDES Storm Water Discharge Permit. Negotiations between the City and the County have resulted in separate MS4 Applications. MDT has co-signed the permit area bounded by the City limits.

For the signalized alternatives, a paved shoulder section south of Hesper Road will be considered during final design instead of curb and gutter as a mitigation measure to eliminate the need for a storm water collection system for that segment of the project corridor (Hesper Road to Canyon Creek). For the roundabout alternatives, the same mitigation measures will be evaluated south of the BBWA Bridge (approximately 85 m [280 ft] south of the Hesper Road intersection). These mitigation measures will not be applicable between Hesper Road and the BBWA Bridge due to the roundabout design.

If wells are discovered during final design or construction, the relocation of impacted wells will be in accordance with FHWA's and MDT's standard procedures.

### **3.4.3 Water Body Modifications**

There are presently five water crossings within the project limits. These crossings include a slough, one canal and three ditches. One of these crossings, Hogan's Slough, includes an associated wetland. Details on the existing structures and water bodies are included below. The wetland determination noted here is subject to COE review.

#### **Bridges**

##### ***BBWA Canal Bridge***

Shiloh Road crosses the BBWA Canal just south of Hesper Road. The roadway crosses the canal with a prestressed concrete teebeam bridge 14.02-m (46.00-ft) long and 25.15-m (82.51-ft) wide. There are no piers in the canal. The canal is a jurisdictional water of the US.

##### ***Hogan's Slough Bridge***

Shiloh Road crosses Hogan's Slough approximately halfway between Hesper Road and King Avenue. The roadway crosses the slough with a precast concrete slab bridge 12.19-m (40.0-ft) wide by 4.88-m (16.01-ft) long with timber abutments. There are treated posts and bridge pilings in Hogan's Slough. Hogan's Slough is a jurisdictional water of the US and the adjacent riparian areas are Category IV jurisdictional wetlands.

#### **Culverts**

##### ***Snow Ditch***

Shiloh Road crosses the Snow Ditch at Central Avenue. Water is conveyed under the roadway with a box culvert. Under the Talent Waters decision (*Headwaters, Inc. vs. Talent Irrigation District*, 243 F.3d 526), this water body is a jurisdictional water of the US.

##### ***Big Ditch***

Shiloh Road crosses the Big Ditch directly north of Colton Boulevard. The ditch was put into culvert when a pedestrian underpass was constructed at this location in 2000. Under the Talent Waters

decision (*Headwaters, Inc. vs. Talent Irrigation District*, 243 F.3d 526), this water body is a jurisdictional water of the US.

### **Canyon Creek Ditch**

Shiloh Road crosses the Canyon Ditch directly north of Zoo Drive. Water is conveyed under the roadway in corrugated metal pipes encased in concrete. Under the Talent Waters decision (*Headwaters, Inc. vs. Talent Irrigation District*, 243 F.3d 526), this water body is a jurisdictional water of the US.

## **Impacts**

### **No Build Alternative**

The five existing crossings would remain unchanged in the No Build Alternative. No in-stream work would be required, so no disturbance of existing conditions would occur. The structures would also not change, and there would be no opportunity to reduce flooding potential with larger culverts.

### **Build Alternatives**

Short-term impacts associated with construction are addressed in Section 3.5.

The impacts are similar among all of the build alternatives because the number of structures replaced and/or constructed is the same. The BBWA Bridge would be preserved under all of the build alternatives and an additional structure for the multi-use path would span the canal immediately west of the existing bridge. The BBWA would require that the canal be lined in concrete under the new bridge and approximately 3 m (10 ft) upstream and downstream of the bridge for maintenance purposes.

The existing Hogan's Slough Bridge would be replaced with a box culvert under all of the build alternatives. The existing culvert at Snow Ditch would also be replaced and extended. The existing culvert for the Big Ditch does not need to be replaced under any of the alternatives. The existing Canyon Creek Ditch culvert would be replaced under all of the build alternatives.

In-stream work can affect hydrology, flooding potential, erosion, sedimentation, and aquatic habitats. The clearing of riparian vegetation would occur as a result of this project. Although final design for water crossings has not been determined, new structures would be designed to minimize this type of disturbance. Because there would be the same number of water crossings as existing conditions under any of the alternatives and new structures would be designed to minimize permanent disturbance, long-term impacts to water bodies would be similar to or perhaps less than existing conditions.

## **Mitigation**

Structures will be designed to minimize disruption of hydrology or permanent alterations of banks and in compliance with applicable permits and authorizations including CWA Section 404 and SPA 124.

Clearing of riparian areas will be done in accordance with mitigation measures described in Section 3.4.5. Specific mitigation measures for the BBWA Canal and Snow Ditch are described in Section 3.3.7.

### 3.4.4 Wetlands (EO 11988)

Wetlands described in this EA fall into two categories: jurisdictional wetlands or non-jurisdictional wetlands. The COE makes the final determination on the jurisdiction of wetlands. Wetland determination noted here is subject to COE review. Coordination with the COE regarding final determination of wetlands and jurisdiction will continue and the final determination of jurisdiction is subject to COE verification.

Jurisdictional wetlands are defined by the COE as areas that possess three mandatory parameters described in Section 404 of the CWA: hydrophytic vegetation, hydric soils, and wetland hydrology. Non-jurisdictional wetlands are those that are isolated, intrastate, and not adjacent to navigable waters or their tributaries based on the Joint Memorandum issued by EPA and COE on January 10, 2005. Wetland determinations would need to be field-verified by the COE.

### Research Methods

Wetland delineations were conducted along the project corridor, June 26 – July 1, and October 9 – October 11, 2002; and June 14 – 16, 2005 to determine the presence and extent of jurisdictional and non-jurisdictional wetlands in the proposed project area. A total of 15 areas throughout the corridor were assessed to determine whether they qualify as wetlands based on the presence of the three parameters described above. Of these 15 areas, six areas were determined to be jurisdictional wetlands; one was an isolated non-jurisdictional wetland area; and the remaining eight were determined to be jurisdictional or non-jurisdictional ditches, but did not have wetlands. See Environmental Overview Maps in Appendix A for wetland locations. Full descriptions of each jurisdictional and non-jurisdictional wetland are found in the Biological Resources Report (BRR) for the Shiloh Road Reconstruction Project (DEA 2005) and BRR Addendum (DEA, 2006).

### Functional Value Assessment

The jurisdictional and non-jurisdictional wetland areas were evaluated for functional value according to the MDT Montana Wetland Assessment Form. There are four functional categories for wetlands:

- Category I wetlands are high quality Natural Heritage Wetlands.
- Category II wetlands are more common than Category I wetlands and provide habitat for sensitive plants or animals, function at very high levels for wildlife/fish habitat, are unique in a given region, or are assigned high ratings for many of the assessed functions and values.
- Category III wetlands are more common, generally less diverse, and often smaller and more isolated than Category I and II wetlands. They can still provide many functions and values, although they may not be assigned high ratings for as many parameters as Category I and II wetlands.
- Category IV wetlands are generally small, isolated, lack vegetative diversity, provide little in the way of wildlife habitat, and often have been disturbed.

No Category I or II wetlands were identified within the project corridor. All of the wetlands in the project area are Category IV wetlands, except for one jurisdictional wetland which is a Category III wetland.

## Impacts

### Direct Impacts

Table 3.24 provides the approximate total potential direct impacts to jurisdictional and non-jurisdictional wetlands in the project area. Long-term direct wetland impacts include the loss of wetland area, which would occur under all of the build alternatives. These impacts could result from the grading and filling for a wider roadbed, construction of new bridges and culverts, and replacement of existing bridges and culverts.

**Table 3.24 Approximate Direct Impact to Wetlands**

Wetland Type	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
Jurisdictional	No impacts.	1.0 ha (2.4 ac)	1.0 ha (2.5 ac)	1.0 ha (2.3 ac)	1.1 ha (2.8 ac)
Non-Jurisdictional	No impacts.	0.0 ha (0.0 ac)	0.0 ha (0.0 ac)	0.0 ha (0.0 ac)	0.0 ha (0.0 ac)
<b>Total</b>	<b>0.0 ha (0.0 ac)</b>	<b>1.0 ha (2.4 ac)</b>	<b>1.0 ha (2.5 ac)</b>	<b>1.0 ha (2.3 ha)</b>	<b>1.1 ha (2.8 ac)</b>

Note: Conversion totals do not match due to rounding.

Source: Biological Resources Report Addendum (DEA, 2006)

### Indirect Impacts

Indirect impacts to wetlands could include the modification of wetland functions from construction impacts (see Section 3.5), cumulative growth impacts (see Section 3.6), and other factors as described below. Long-term indirect impacts would be similar for all of the build alternatives.

#### Sedimentation

Sedimentation could occur when areas adjacent to wetlands are left exposed as a result of cut and fills. This potential impact would likely be localized and in most cases can easily be avoided through implementation of BMPs. Filling wetlands can increase on-site and off-site flooding risks. During periods of heavy rainfall, wetlands serve as flood storage areas, where water can dissipate without damage to developed uplands. The indirect effect of the reduction in flood storage areas in the project corridor would be minimal because the proposed project would not substantially contribute to the filling of wetlands in the corridor. All of the build alternatives would account for a small reduction in flood storage areas.

#### Water Quality Degradation

The primary source of contaminants from transportation systems is runoff (including metal and inorganic material) from impervious surface area. Because the existing roadway would be widened under all of the build alternatives, impervious surface area would increase and could increase the amount of contaminant input into wetlands. However, the increase in impervious surface area from the proposed project would be negligible when compared to the total amount of impervious surfaces in the project vicinity and the contamination effects of the roadway have already been realized. As noted



in the water resources/quality section, contamination is expected to have only minimal effect on water quality in the project corridor. Therefore, the effect of water quality degradation on wetlands from storm water runoff is expected to be minor.

#### Increased Water Temperature

The increase of impervious surface area and clearing of vegetation, especially riparian vegetation, are the two greatest actions that affect water temperature. Both reduce infiltration and shading and create more solar exposure to runoff, thereby resulting in increased water temperatures in wetlands. Most transportation projects that result in the reduction of vegetated areas and/or increase in impervious surface area contribute to some extent to a temperature increase in receiving waters. Effects to wetlands in the project corridor would be minor because only a minimal amount of riparian habitat would be removed, and the wetlands generally occur adjacent to an existing roadway and are already receiving contamination from runoff. In addition, the amount of increased impervious surface area would not likely affect the water temperature of runoff in the project corridor due to the increased impervious area being spread out throughout the project corridor.

#### Noxious Weeds

Indirect impacts associated with all of the build alternatives would include the potential short-term establishment of noxious weeds and other invader species in areas of construction disturbance. These noxious vegetation types may become established in disturbed areas until desirable vegetation is established. However, these jurisdictional and non-jurisdictional wetlands are currently adjacent to the existing road and already experience some level of noxious weed invasion. Therefore, the project is not anticipated to increase opportunistic edge and non-native species in wetland areas.

#### Hydrology

Roads commonly affect how water and its various loads move through watersheds. Roads can disrupt natural flows of surface water and groundwater and/or create new routes for the flow of water. The presence of roads bisecting wetlands can disrupt water circulation patterns and, in some cases, the movement of organisms, so much that the separated water bodies exhibit different ecological characteristics.

The existing roadway and infrastructure already bisects the majority of the non-jurisdictional ditches and canals in the project corridor. The proposed improvements would have a minimal effect on their hydrology. Crossings of these ditches and canals, including Hogan's Slough, would include construction of appropriate hydraulic conveyance structures to maintain water flow at these crossings.

#### Wetland Draining

Some of the wetlands in the corridor are located in proximity to culverts, which showed signs of ponding during the site visit due to inadequate size, misalignment with the associated ditch or canal, or lack of maintenance. Replacing these existing culverts during construction may alter the hydrology of some wetlands, resulting in the potential reduction in wetlands due to reduced hydrological inundation or saturation.

### **Mitigation**

MDT's standard practice in regard to jurisdictional wetland impacts is to:

1. Avoid potential adverse impacts to the maximum extent practicable.

2. Minimize unavoidable adverse impacts to the extent appropriate and practicable.
3. Compensate for unavoidable adverse impacts that remain after all appropriate and practicable minimization has occurred.

Estimated wetland impacts included in this EA are based on conceptual design and are subject to COE review. Adverse wetlands impacts have been avoided and minimized as much as practicable and as much as can be determined in the conceptual design phase. Avoidance and minimization measures to date include designing reconstruction of Shiloh Road to generally include widening of the road using the existing centerline, holding the grade as low as practicable, and steepening fill slopes where practicable and where safety would not be compromised.

Avoidance and minimization measures will continue to be employed where practicable throughout the design and construction. Mitigation for unavoidable adverse impacts to jurisdictional wetlands will be coordinated with the COE and other resource agencies as required for permitting. If offsite mitigation is required, wetland impacts will likely be mitigated at an established MDT Wetland Reserve in Watershed #13 (Upper Yellowstone). Those reserves currently include the Stillwater River and Wagner Pit Sites. Additional sites are currently being developed.

### 3.4.5 Vegetation

Shiloh Road traverses mostly flat terrain that has been used primarily for irrigated and dryland farming, and the area surrounding Shiloh Road is now being developed with subdivisions on both sides of the road. The general landscape in the vicinity of the project consists of residences, small businesses, agricultural land, mining operations, as well as riparian vegetation associated with ditches, sloughs, canals, and Canyon Creek. Approximately 80 species of vegetation (trees, shrubs, and herbs) were identified in the project area during the 2002 and 2005 field visits including such species as American elm, plains cottonwood, big sagebrush, prairie rose, western snowberry, alfalfa, Canada thistle, cheatgrass, curly dock, field bindweed, horsetail, knapweed, orchardgrass, red clover, smooth brome, timothy, white clover, and wooly sedge. There are no vegetation species identified as Montana species of special concern in the project area (DEA, 2005).

There are several large stands of mature trees located throughout the project corridor along with numerous small clusters or single standing trees. In particular, there is a large stand along the JTL Gravel Pit, a large stand associated with the Olympic Subdivision Park, and a large stand that runs along the length of Shiloh Village Mobile Home Park. These trees provide potential habitat for wildlife and bird species and a screen between Shiloh Road and adjacent land uses.

Noxious weeds are broken into three categories according to Montana Department of Agriculture (MDA); based on the number of infested areas in the state and management criteria. Category one noxious weeds, which represent the most widespread infestations in the state, were found in the project corridor during field visits. The category one noxious weeds identified in the project corridor include Canada thistle, field bindweed, white top (hoary cress), Dalmatian toadflax, common tansy, common hound's-tongue, oxeye daisy, and several knapweeds. Category one weeds are capable of rapid spread and render land unfit or greatly limit beneficial uses. No category two or category three noxious weeds were identified within the project corridor (DEA, 2005).

Yellowstone County manages noxious weeds within the project area, and the County has a list of weeds, in addition to the MDA list, declared to be noxious. County designated noxious weeds found within the project corridor include poison hemlock, puncturevine, and showy milkweed (DEA, 2005).

## Impacts

### ***No Build Alternative***

Under the No Build Alternative, there would be no physical reconstruction activities; therefore, there would be no impacts to vegetation under this alternative.

### ***Build Alternatives***

Because there are no vegetation species identified as Montana species of special concern in the project area, there would be no impact to these species under any of the build alternatives.

Short-term impacts associated with construction are addressed in Section 3.5.

Long-term impacts to vegetation would be similar under all of the build alternatives, including a permanent loss of vegetation. Riparian vegetation would be removed from replacement of bridges and culverts and improvements to the roadway; however, these impacts would be minor because the majority of the vegetation being permanently removed has already been disturbed by the existing roadway. The 4.5 ha (11.1 ac) of riparian vegetation in the project area represents a small portion of similar vegetation in the project vicinity.

Long-term impacts also include the removal of mature trees throughout the corridor to accommodate the improvements to the roadway and bridge and culvert replacement. The majority of the trees that would be removed are associated with stands located along the JTL Gravel Pit and Shiloh Village Mobile Home Park (see Figure 3.4). The Traffic Signals at Arterials Alternative and Traffic Signals at Arterials and Major Development Alternative would require removing approximately 260 mature trees throughout the corridor. Under the Roundabout at Arterials Alternative and Roundabouts at Arterials and Major Development Alternative approximately 245 mature trees would be removed. Under the

**Figure 3.4** Mature Trees at the Shiloh Village Mobile Home Park



roundabout alternatives fewer trees would be removed at the northeast corner of Shiloh Road and Monad Road (Shiloh Village Mobile Home Park).

Disturbing ground cover from construction activities under the build alternatives could facilitate the spread of noxious weeds by opening up new areas for invasion and assisting in transportation of weeds to new areas by equipment. Increases in noxious weeds would be minimal because most of the land adjacent to Shiloh Road is already infested with noxious weeds.

### Mitigation

In accordance with MDT Standard Specifications, clearing and grubbing will be limited to the area necessary for construction of the project.

As a result of ROW negotiations and agreements with individual property owners trees may be replaced.

Mitigation for noxious weeds is described in Section 3.5.

### 3.4.6 Wildlife and Migratory Birds

#### Montana Species of Special Concern

There are three species of special concern that have been documented within or near the project vicinity according to the Montana Natural Heritage Program (MTNHP): western hognose snake, spiny softshell turtle, and milk snake (DEA, 2005).

- **Western hognose snakes** are listed by the MTNHP as a species of special concern (with G5/S2 ranking, which means globally the species is demonstrably secure, but in Montana it is imperiled because of rarity or because of other factors making it vulnerable to extinction throughout its range). The western hognose snake has been found in a variety of habitats including sagebrush-grassland habitat, near pine savannah in grassland underlain by sandy soil, in arid areas, farmlands, and floodplains, particularly those with gravelly or sandy soils. The western hognose snake has not been documented in the project area since 1909.
- **Spiny softshell turtles** are listed by the MTNHP as a species of special concern (with G5/S3 ranking, which means globally the species is demonstrably secure, but in Montana the species is either very rare and local throughout its range, found locally in a restricted range, or vulnerable to extinction throughout its range). They primarily occupy large rivers and its tributaries, but are also found in lakes, ponds along rivers, bayous, irrigation canals, oxbows, and pools along intermittent streams. The spiny softshell turtle was last documented along the Yellowstone River near the project area in 1997 and there is no documentation of it in Canyon Creek, which crosses Shiloh Road at the southern project limit.
- **Milk snakes** are listed by the MTNHP as a species of special concern (with G5/S2 ranking, which means globally the species is demonstrably secure, but in Montana it is imperiled because of rarity or because of other factors making it vulnerable to extinction throughout its range). They have been reported in areas of open sagebrush-grassland habitat and ponderosa pine savannah with sandy soils, most often near areas of rocky outcrops and hillsides or badland scarps. Milk snakes have been found within the Billings city limits; however, the last documentation of milk snakes near the project vicinity was in 1971.

## Urban and Rural Wildlife

During the 2005 field visit, the following species were observed in the project area: muskrat, white-tailed deer, cottontail rabbit, Richardson's ground squirrel, painted turtle, garter snake; as well as recent beaver activity. In addition, deer mouse, fox squirrel, meadow vole, mule deer, raccoon, and red fox were found within the project area during a 1993 Survey of Vertebrates Resident at ZooMontana. Species such as skunk, shrew, rat, coyote, porcupine, reptiles, amphibians, and other open forest and grassland animals most likely use the project area as well (DEA, 2005).

## Migratory Birds

Several bird species are present in the project vicinity, especially in the riparian areas. The following bird species were observed during field visits in 2002 and 2005: American coot, American goldfinch, American robin, barn swallow, belted kingfisher, black-capped chickadee, Bullock's oriole, Canada goose, canvasback, cliff swallow, common crow, common grackle, common yellowthroat, dark-eyed junco, European starling, great blue heron, house finch, house sparrow, killdeer, mallard, mourning dove, northern harrier, osprey, red-eyed vireo, redwing blackbird, ring-necked pheasant, rock dove, ruddy duck, sandpiper species, western meadowlark, western wood pewee, yellow warbler, yellow-headed blackbird, and yellow-rumped warbler. While these birds are not species of special concern at the federal or state level, they are protected by the Federal Migratory Bird Treaty Act (MBTA) of 1918. Under this Act, destruction or damage of active or occupied nests and eggs of migratory birds is prohibited.

All bridges in the project area were examined during the 2002 and 2005 field visits. A few inactive cliff swallow nests were observed at the Canyon Creek Bridge during the June 2005 field visit. No active or inactive nests were observed at the BBWA Canal Bridge or the Hogan's Slough Bridge although both bridges could provide potential nesting habitat for cliff swallows or other migratory birds. An active osprey nest was also identified within the project vicinity during the June 14 - 16, 2005 field visit (approximately 1.2 km (0.75 mi) from the project area).

## Impacts

### **No Build Alternative**

Under the No Build Alternative, there would be no physical reconstruction activities; therefore, there would be no impacts to wildlife or migratory birds under this alternative.

### **Build Alternatives**

There would be no effect on western hognose snake, spiny softshell turtle, or milk snake, all of which are Montana species of special concern, under any of the proposed build alternatives. Suitable habitat for the western hognose snake is located adjacent to the project area, but due to disturbances and development, there is little habitat remaining in the project area; and no individuals have been documented in the project area recently. Spiny softshell turtles are found primarily in large rivers and their tributaries, and there is no documented occurrence in Hogan's Slough or Canyon Creek, which run through the project area. Due to disturbances, there is little to no native habitat remaining in the project area for milk snakes; and no individuals have been documented in the project area recently.

Short-term impacts associated with construction are addressed in Section 3.5.

All of the build alternatives have a similar footprint and alignment, as well as similar construction activities; therefore, it is assumed that all build alternatives would have similar types of impacts to wildlife and migratory birds.

There would be no substantial long-term effects on wildlife under the build alternatives. Long-term impacts to wildlife could occur as a result of fragmentation, alteration, and loss of habitat from construction of the proposed project; water quality degradation from storm water runoff over an increased impervious area; and an increase in wildlife mortality from higher traffic volumes. There would be a loss of wildlife habitat from construction of bridges, culverts, and roadway improvements; however, the proposed project would be constructed on the existing roadway alignment where the habitat being removed is already disturbed by the existing roadway. It is anticipated that there would be a slightly greater long-term loss of potential wildlife habitat in riparian areas under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives due to the proposed JTL/County access intersection improvements near Hogan's Slough.

The effects of habitat fragmentation and alteration and water quality degradation would be minimal because most of these effects caused by the roadway have already been realized, and the land is not considered prime habitat. Water quality degradation would be slightly greater under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives due to a larger impervious surface area (more paved area) under these alternatives. An increase in traffic volumes for all alternatives may increase the frequency of road kill within the project corridor, though not substantially because the project corridor does not have an abundance of wildlife. Overall, the proposed project may affect wildlife should they be present, but is not likely to contribute to a trend toward federal listing or loss of viability of any species.

Potential long-term impacts to migratory birds could occur as a result of loss of habitat from construction of bridges, culverts, and roadway improvements and an increase in mortality from higher traffic volumes. Most of the migratory bird species are found in the riparian areas and may be impacted from the loss of habitat in these areas. However, the 4.5 ha (11.1 ac) of riparian habitat that exists in the project area represents a small portion of similar habitat in the project vicinity. It is anticipated that there would be a slightly greater long-term loss of potential migratory bird habitat in riparian areas under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives due to the proposed JTL/County access intersection improvements near Hogan's Slough.

Although no migratory bird nests, such as cliff swallow nests, were observed at Hogan's Slough Bridge, this bridge would be rechecked prior to replacement. If migratory bird nests are found, the mitigation identified below would be implemented. The Canyon Creek Bridge and the BBWA Canal Bridge would not be impacted under any of the build alternatives. There would be no impacts to the osprey nest identified during the field visit because the nest is located outside the project area [approximately 1.2 km (0.75 mi.) from the project area].

Overall, impacts to migratory birds, if present, and their habitat would be minimal when compared to the overall size of the project vicinity. The proposed project is not likely to contribute to a trend toward Federal listing or loss of viability of any migratory bird species.

## Mitigation

Mitigation measures described under the Water Resources/Quality (Section 3.4.2) will minimize impacts to wildlife and migratory bird habitat.

The Hogan's Slough Bridge will be rechecked for nesting activity closer to the start of construction. If the bridge is to be removed during the migratory bird nesting period, inactive nests will be removed prior to the nesting period and efforts will be undertaken to ensure that new nests are not established prior to removal of the old structure. If active nests are re-established or exist on the structure, on or between May 1 and August 15 (the nesting period), the structure or nests will not be removed until the MDT project manager, in coordination with MDT Environmental Services, provides approval.

### 3.4.7 Aquatic Species

Hogan's Slough and Canyon Creek both flow through the project area, but only Hogan's Slough crosses Shiloh Road within the project construction limits. Montana Fish, Wildlife and Parks (MFWP) list the following fish species as occurring in both of these water bodies: brown trout, fathead minnow, lake chub, longnose dace, and white sucker. In addition, MFWP also lists flathead chub, mountain sucker, shorthead redhorse, western silvery minnow, and yellow bullhead as occurring in Canyon Creek. Brown trout, western silvery minnow, white sucker, and several schools of juvenile minnows too small to identify were captured in Canyon Creek during a 1993 Survey of Vertebrates Resident at ZooMontana. Brown trout and yellow bullhead are the only species listed above that are considered game species by MFWP. None of the species listed or documented as occurring in the project area is on the USFWS threatened and endangered list or the Montana species special of concern list. There are no spawning areas in the above mentioned creeks or other water bodies in the project area (DEA, 2005).

### Impacts

#### **No Build Alternative**

Under the No Build Alternative, there would be no physical reconstruction activities; therefore, there would be no impacts to aquatic species under this alternative.

#### **Build Alternatives**

Because there are no aquatic Montana species of special concern or USFWS threatened or endangered species in the project area, there would be no impacts to these species. There would be no impact to spawning areas from the proposed project because there are no spawning areas in the project area.

Short-term impacts associated with construction are addressed in Section 3.5.

All of the build alternatives have a similar footprint and alignment, as well as similar construction activities; therefore, it was assumed that all of the build alternatives would have similar types of impacts to aquatic species.

Potential long-term impacts to aquatic species would include effects caused by contaminants, increased water temperature, and loss of riparian vegetation. The primary source of contaminants from transportation systems is runoff over impervious surface area. As noted in the Water Resources/Quality section, contamination is expected to have only minimal effect on water quality in Hogan's Slough and Canyon Creek. The increase in impervious surface area from the proposed project would be negligible when compared to the total amount of impervious surfaces in the project vicinity, and the contamination effects of the roadway have already been realized. Therefore, the effect of water quality degradation on aquatic species from storm water runoff is expected to be minor. Potential long-term effects to aquatic species in Hogan's Slough and Canyon Creek from water contamination under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives would be slightly greater due to more paved area.

The increase of impervious surface area and clearing of vegetation, especially riparian vegetation, are the two most prominent actions that affect water temperature in aquatic environments. Clearing of vegetation reduces infiltration and shading and creates more solar exposure to runoff, thereby resulting in increased water temperatures in receiving water bodies. Most transportation projects that result in a reduction of vegetation areas and/or an increase in impervious surface area contribute to some extent to a temperature increase in receiving waters. The potential effect to fisheries habitat from increased

water temperature would likely be negligible in both Hogan's Slough and Canyon Creek. At Hogan's Slough, the effect caused by impervious surfaces has already been realized and the riparian habitat adjacent this water body has been substantially altered due to past construction activities; at Canyon Creek the effect caused by impervious surfaces has already been realized and no riparian habitat would be removed along this water body. Potential long-term effects to aquatic species in Hogan's Slough and Canyon Creek from increased water temperature under the Traffic Signals or Roundabouts at Arterials and Major Development Alternatives would be slightly greater due to storm water runoff over a larger impervious surface area (more paved area).

Roadway widening and bridge replacement would result in some riparian habitat being permanently removed from the banks of Hogan's Slough in the project area, reducing potential for shading and increasing potential for introduction of organic matter.

### **Mitigation**

The structure at Hogan's Slough will be designed for fish passage. The proper placement of the structure will be determined by means of engineering analysis to address the required hydraulic functions.

#### **3.4.8 Air Quality**

In accordance with the Clean Air Act (CAA) EPA has set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of NAAQS. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The EPA has set NAAQS for six principal pollutants, which are called "criteria" pollutants. The criteria pollutants are carbon monoxide (CO), lead, nitrogen dioxide, particulate matter (PM), ozone, and sulfur oxides. NAAQS for PM have been specified for PM less than 10 microns (PM<sub>10</sub>) and PM less than 2.5 microns (PM<sub>2.5</sub>). Areas of the country where air pollution levels persistently exceed the NAAQS may be designated "non-attainment." Although the CAA is a federal law covering the entire nation, state and local air pollution control agencies do much of the work to fulfill the requirements of the CAA. The MDEQ has oversight of Montana's air quality program.

EPA designated Billings as designated non-attainment for CO in a Federal Register (FR) notice on March 3, 1978. The CO violation of a primary standard was attributed principally to motor vehicle emissions. A control plan, called a State Implementation Plan (SIP), was developed to bring Billings back into compliance. The initial CO SIP concentrated on an intersection reconstruction at Exposition and First Avenue. The final CO SIP incorporated computer modeling with the intersection reconstruction, and was approved in the FR on January 16, 1986. Billings was reevaluated in September 1990, based on the 1990 CAA Amendments (CAAA) and the lack of exceedances in the 1988 and 1989 CO monitoring. In a November 6, 1991, FR notice, Billings was listed as a "not classified" non-attainment area for CO.

On February 9, 2001, the Governor of Montana submitted a request to re-designate the Billings "not classified" CO non-attainment area to attainment for the CO NAAQS. The Governor also submitted a 10-year CO maintenance plan. EPA approved the request and the CO maintenance plan effective April 22, 2002. Billings is now considered a limited maintenance plan attainment area for CO and must comply with the maintenance plan. In accordance with the CAAA, transportation plans and programs are required to be in conformity with the state implementation plan for air quality. EPA issued rules providing definition of the criteria and procedures to be used in determining conformity.



The *Billings Urban Area 2005 Transportation Plan* (May 2005) prepared by the City of Billings was found to be in conformity with the *Carbon Monoxide State Implementation Plan* (SIP) for the State of Montana.

## Impacts

### **No Build Alternative**

As the LOS decreases, vehicle emissions for CO increase. All of the major intersections on Shiloh Road are predicted to operate at a LOS E or F (very congested) by 2027. With this poor LOS, congestion would result in higher vehicle emissions for CO, and therefore a localized adverse impact on air quality in these locations.

### **Build Alternatives**

Short-term impacts associated with construction are addressed in Section 3.5.

The build alternatives represent the Shiloh Road project included in the most recent conforming transportation plan, the *Billings Urban Area 2005 Transportation Plan*. Therefore this project would comply with Section 176 (c) of the CAA (42 USC 7521(a), as amended.

In addition, the LOS at the intersections for this proposed project's build alternatives are predicted to operate at an overall LOS C or better in the pm peak hour, which would be an improvement over the no-action conditions. Therefore, the localized impacts on air quality, particularly CO, from vehicle emissions would be an improvement over no action. The roundabout alternatives would offer slightly more improvement than the signalized alternatives because the LOS for the roundabouts is predicted to be higher than at the signalized intersections.

## Mitigation

No mitigation necessary.

### **3.4.9 Section 4(f) Properties**

Section 4(f) of the 1966 Department of Transportation Act, which is codified at 49 USC Section 303, and FHWA regulations found at 23 CFR Section 771.135, prohibits FHWA from approving the use of land from a significant publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any significant historic site, unless a determination is made that there is no feasible and prudent alternative to the use of land from the property and the action includes all appropriate planning to minimize harm to the property.

Parks and recreation facilities within the corridor were investigated to determine if the Section 4(f) regulations would apply.

The Section 4(f) regulations are not applicable to ZooMontana and Shiloh Village Subdivision Park because they are not publicly owned (both are privately owned). Similarly, Section 4(f) does not apply to the proposed trails in the study area (BBWA West End Trail, Hogan's Slough Trail and Crossing, Arnold Drain Trail, or the Monad Road Pedestrian Crossing) because the land for the proposed locations of these trails is not publicly owned. Several city-owned parks or park parcels, such as Ann Ross Park, Olympic Subdivision Park, and Rush Subdivision Park, were identified as publicly-owned parks; but found to be not significant when the availability and function of the sites were compared with the City's recreational and park objectives (See Appendix D for City letter). In

addition to these city-owned park lands, the Circle 50 Subdivision and Mission United Subdivision park land, and Big Ditch Trail and Pedestrian Crossing are owned by the City. The Big Ditch Trail, which crosses under Shiloh Road, includes areas of these two parks. However, Section 4(f) is not applicable to these sites because within the Shiloh Road corridor, these trail and park parcels were designated as a Community Transportation Enhancement Program project for the transportation system. Since one of the current purposes or functions of these sites is for transportation, Section 4(f) regulations do not apply.

Clydesdale Park and Sharptail Park parcel are two publicly-owned park sites along the project corridor under County jurisdiction. The County determined that these two park sites are not significant and therefore do not meet the definition of a Section 4(f) resource. The letters documenting the County's determination and FHWA's concurrence are in Appendix D.

There are four NRHP-eligible sites (three historic canals and one historic site) in the project corridor which meet the definition of a 4(f) resource. These include site 24YL161/1382/1532 (BBWA Canal), site 24YL1559 (Bunkhouse), site 24YL1563 (Snow Ditch) and site 24YL664/24ST296 (Big Ditch Canal).

There are no wildlife or waterfowl refuges in the corridor.

## Impacts

The properties in the corridor for which Section 4(f) is applicable are listed in Table 3.25.

**Table 3.25 Section 4(f) Properties**

Section 4(f) Site	Type	No Build Alternative	Traffic Signals at Arterials Alternative	Roundabouts at Arterials Alternative	Traffic Signals at Arterials and Major Development Alternative	Roundabouts at Arterials and Major Development Alternative
BBWA Canal (24YL161/1382/1532)	Historic	No Section 4(f) use	Section 4(f) use	Section 4(f) use	Section 4(f) use	Section 4(f) use
Bunkhouse (24YL1559)	Historic	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use
Big Ditch Canal (24YL664/24ST296)	Historic	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use	No Section 4(f) use
Snow Ditch (24YL1563)	Historic	No Section 4(f) use	Section 4(f) use	Section 4(f) use	Section 4(f) use	Section 4(f) use

Of the Section 4(f) properties in the corridor, only two are impacted by the proposed project alternatives. These are the historic BBWA Canal and Snow Ditch. None of the other properties have a Section 4(f) use for any of the alternatives.

### **Big Ditch Canal**

The Big Ditch Canal (24YL664/24ST296) would not be affected by any of the alternatives. The Big Ditch Canal was put into culvert near Shiloh Road to install a pedestrian underpass in 2000. The ditch goes into culvert 75 m (246 ft) west of Shiloh Road and comes out of culvert 88 m (289 ft) east of

Shiloh Road. The exposed areas of the ditch are well beyond the construction and ROW limits of this proposed project.

### ***Bunkhouse***

The Bunkhouse (24YL1559) would not be affected by any of the alternatives. The traffic signal alternatives avoid direct impacts to the site and structure through ROW minimization and the roundabout alternatives avoid direct impacts to the site through an alignment shift, modifications to sidewalk design, construction of retaining wall, and ROW minimization.

The Section 4(f) impacts by alternative are discussed below.

### ***No Build Alternative***

There are no impacts to Section 4(f) resources in the No Build Alternative.

### ***Build Alternatives***

All of the build alternatives would result in impacts to two Section 4(f) properties: historic BBWA Canal (24YL161/1382/1532) and Snow Ditch (24YL1563).

#### **BBWA Canal**

The new bridge for the multi-use path would be constructed over the historic BBWA Canal (24YL161/1382/1532) and would result in the placement of the footers at or near the top of the canal bank. In addition, approximately 0.05 ha (0.12 ac) of grading impacts adjacent to the existing bridge structure over the canal would occur due to widening of the roadway approaches. Construction impacts to the BBWA property would occur east of the bridge on the north side. In the Shiloh Road corridor, the BBWA Canal easement is typically approximately 36-m (116-ft) wide. However, at the southeast corner of the Shiloh Road intersection the easement is much wider and impacted by the intersection construction. For the purposes of the Section 4(f), the additional construction and ROW impacts outside the canal structure were calculated within the typical 36-m (118-ft) wide easement. Based on this there would be approximately 0.04 ha (0.11 ac) of construction impacts to the easement for the traffic signal alternatives and approximately 0.03 ha (0.07 ac) for the roundabout alternatives. In addition to the construction impacts within the easement, an additional area would be incorporated into MDT ROW. These impacts would result in a Section 4(f) use of this resource as defined by 23 CFR 771.135.

#### **Snow Ditch**

The installation of new culvert for Snow Ditch would be required due to the increase in roadway width. There would be approximately 90 m (295 ft) of linear impacts due to installation of culvert for the traffic signal alternatives and approximately 100 m (328 ft) for the roundabout alternatives. The relocation of a diversion structure, head gate, and small pumphouse would also be required. An additional estimated 0.50 ha (1.24 ac) for the traffic signal alternatives and estimated 0.41 ha (1.01 ac) for the roundabout alternatives would be outside of existing MDT ROW would require acquisition. These impacts would result in a Section 4(f) use of this resource as defined by 23 CFR 771.135.

### **Mitigation**

Refer to Appendix D for the Programmatic Section 4(f) Evaluations and mitigation for the historic BBWA Canal (24YL161/1382/1532) and Snow Ditch (24YL1563).

### **3.5 CONSTRUCTION IMPACTS**

The following discussion addresses potential temporary construction impacts as a result of the build alternatives and identifies mitigation measures to avoid, reduce, or eliminate adverse impacts. Construction activities would include bridge and culvert replacement and demolition, excavation and grading, utility relocations, construction of retaining walls, sidewalks, multi-use path, installation of lighting or electrical elements, storm drainage improvements, landscaping, and paving. Final construction methods would be addressed during development of the final construction plans. The sequencing of construction packages and construction time frame would also be addressed during development of final design plans. Mitigation measures would be incorporated into final construction to further minimize impacts to residents, businesses, and the traveling public.

#### **3.5.1 No Build Alternative**

There would be no construction impacts associated with the No Build Alternative.

#### **3.5.2 Impacts Common to All Build Alternatives**

Roadway reconstruction and widening present the potential for increased dust, increased noise, increased water runoff and sedimentation caused by erosion and removal of vegetation, and visual impacts. The build alternatives also present the potential for exposure to or accidental spill of hazardous materials, such as oil and gasoline, from construction vehicles. In addition, increased travel delays during construction, traffic congestion, temporary restricted access to residences and businesses would be expected. It is anticipated that the construction of this project would last one or two construction seasons.

#### **3.5.3 Transportation**

##### **Traffic**

Construction delays would likely create short-term impacts to local and regional traffic circulation in the project area due to lane closures, delays, short-term travel on unpaved surfaces, and reduced travel speeds. Traffic diversions and construction equipment and activities close to the travel lanes would also affect speeds and traffic operation within the construction zone. Disruptions to access and parking for businesses and residences located within the construction zone would occur and could create increased traffic on other streets in West Billings. Disruptions could also affect emergency response in West Billings.

##### ***Mitigation***

A construction traffic control plan will be developed according to MDT Standard Specifications to include construction phasing devised to maintain two lanes of traffic and uninterrupted side road access along the corridor to the greatest extent practicable. The contractor will coordinate with emergency service providers and schools to solicit input for the construction traffic control plan and to provide ongoing information during construction.

##### **Access**

Access to properties along the corridor may be impacted by particular construction activities. Temporary access would be provided for the properties, but these accesses may be less convenient for motorists. In some cases, individual driveways that currently have direct access to Shiloh Road would be impacted.

### ***Mitigation***

Early notification and coordination with affected adjacent property owners.

### **Pedestrians and Bicycles**

Pedestrians and bicyclists might experience short-term impacts traveling on or crossing Shiloh Road within the project limits. However, impacts due to construction would not be vastly different than the current condition since there are few sidewalks or stable riding surfaces.

### ***Mitigation***

Mitigation for construction impacts will include maintenance of walkways and pavement to the extent practicable and providing additional pedestrian signage during construction. The construction traffic control plan will include providing protection, safety, and convenience for pedestrians and bicyclists.

### **3.5.4 Community**

#### **Community Resources**

Emergency service and school bus routes could be impacted by lane closures and traffic congestion during construction.

### ***Mitigation***

Coordination with emergency services and school districts will be undertaken prior to construction and will be included as part of the construction traffic control plan.

### **Local and Regional Economics**

Construction of any of the build alternatives would result in temporary economic benefits to the Billings Area and surrounding Yellowstone County through creation of construction jobs and income for construction workers, including on-site laborers, specialists, engineers, and managers. Some of these jobs would be local jobs, and others would be imported from other communities. Construction would also create indirect jobs in industries that supply highway construction manufacturers with materials and off-site construction industry jobs such as administrative, clerical, and managerial workers. Supply industry jobs include those supported in stone and clay mining and quarrying, petroleum refining, lumber, concrete and cement products, metal products, electrical, equipment rental, and miscellaneous professional services. These effects would be temporary during construction and would not be expected to permanently affect employment, income, or taxes in the project area.

Any of the build alternatives may impact businesses in the project area in the short-term due to delays or detours related to construction. The businesses located adjacent to the proposed project may be additionally inconvenienced during construction due to access limitations.

### ***Mitigation***

Early notification of affected property owners regarding construction activities. During construction, travel delays will be minimized to the extent practicable.

## **Right-of-Way and Relocations**

Construction easements for grading, irrigation relocations, fencing relocations, temporary access, or temporary construction staging would be needed from property owners along the corridor. While the property owners would retain ownership of these areas, their use of these areas during construction would be restricted by particular construction activities. Upon completion of the roadway project, the property owners would have unrestricted use of these areas again.

### ***Mitigation***

Early notification of affected property owners, on a property-by-property basis, of construction activities in order to address potential construction impacts. Easements will be obtained in accordance with applicable laws; specifically, Title 60, Chapter 4 and Title 70, Chapter 30, Montana Code Annotated; and Title 42, USC, Chapter 61, "Uniform Relocation Assistance And Real Property Acquisition Policies For Federal And Federally Assisted Programs."

## **Energy**

Construction of the proposed improvements would require the expenditure of energy both for operation of construction equipment and machinery as well as the manufacture of project components.

### ***Mitigation***

No mitigation necessary.

## **Cultural/Archaeological/Historical Resources**

Impacts to cultural resources during construction would likely include impacts to historic resources from the temporary presence of construction equipment, noise, and fugitive dust (dust in the air). Additionally, access to these properties might be affected during the construction period from lane closures, detours, or construction easements. These impacts would be temporary. It is also possible that previously unidentified archaeological resources could be discovered during construction.

### ***Mitigation***

In accordance with MDT Standard Specifications, if cultural material is unexpectedly encountered during ground-disturbing activities in the corridor, construction will cease immediately, and a qualified archeologist will be consulted to evaluate the significance of the cultural artifacts.

## **Noise**

FHWA Technical Advisory T6160.2 contains requirements for the evaluation of roadway construction noise. If there is a possibility that construction noise would be a sensitive and contentious issue, MDT must comply with the above mentioned noise directive. The impact of roadway construction noise could be considerable in this case, and the public raised construction noise as an issue at public meetings and in comment letters.

The noise section of the City of Billings Code (Ord. No. 05-5354) states the following with respect to construction activities within the City limits:

“Construction projects shall be subject to the maximum permissible noise levels specified for industrial districts for the period within which construction is to be completed pursuant to any applicable construction permit issued by the city, or if no time limitation is imposed, then for a reasonable period of time for completion of the project.”

The maximum permissible noise level specified for industrial districts is 80 dBA.

### ***Mitigation***

To minimize construction noise impacts on the local residents, contractors are required to adhere to local ordinances and BMPs to minimize noise impacts during construction. Contractors will be required to acquire a permit from the City to perform work during night-time hours. Permit conditions limit certain activities during these hours to minimize noise impacts. Advance notice of construction will be provided to area businesses and residences to minimize impacts on community activities.

### **Contaminated Sites/Hazardous Materials**

The project corridor is a previously disturbed area; as a result, the possibility for encountering contaminated materials and/or soils exists.

### ***Mitigation***

If contaminated soils/sites are disturbed during construction, they will be addressed in accordance with MDT Standard Specifications and applicable federal regulations.

### **Farmland**

Temporary construction disturbance includes farmland that would experience temporary modification but would be returned to preconstruction conditions after construction of the project. These types of disturbances are temporary in nature and therefore would not permanently convert farmland to other uses.

Farm operations could be temporarily impacted by construction. Impacts would likely include disruptions to farm parcel accesses from road closures, detours, and presence of construction equipment as well as temporary disruption of irrigation systems.

### ***Mitigation***

No mitigation necessary.

### **Irrigation**

During the reconstruction of the roadway, irrigation facilities may be relocated or temporarily impacted during construction.

### ***Mitigation***

Early coordination with affected irrigation ditch companies and owners to address potential impacts to irrigation activities during roadway reconstruction and irrigation ditch relocations. Reasonable measures will be taken to avoid disruption of irrigation activities during construction, such as scheduling interruptions to a facility when it is not being used (typically mid-October through mid-May).

### **Visual Resources**

Construction activities resulting in temporary impacts such as vegetation removal and the presence of construction equipment, stockpiles of materials, and dust emissions often create a conspicuous impact

to the surrounding environment. Some impacts would be unavoidable, although they would only occur during the construction period.

### ***Mitigation***

Mitigation measures identified for Vegetation and Air Quality will reduce the visual impacts from construction.

## **3.5.5 Natural/Physical Environment**

### **Water Resources/Quality**

Disturbed areas created during construction can create land and water erosion and impact water quality. Spilled fuels or other hazardous materials may also cause impacts to water quality during construction. Storm water runoff presents the potential for violations of water quality standards within the project area. In-stream work, which would be required for bridge and culvert replacements, can contribute to sedimentation and introduction of pollutants.

### ***Mitigation***

An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / Montana Pollutant Discharge Elimination System (MPDES) regulations.

The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control.

To reduce the spread and establishment of noxious weeds and re-establish permanent vegetation, disturbed areas within MDT ROW or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting.

### **Water Body Modifications**

There would be temporary impacts to water bodies such as soil loss, wetland impacts, and sedimentation from erosion. These types of disturbances are temporary in nature and therefore would not permanently alter the natural condition of the water body.

### ***Mitigation***

An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / MPDES regulations.

The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control.

### **Wetlands**

Temporary impacts to wetlands could occur due to physical disturbance from constructing the roadway, constructing bridges and culverts, providing temporary traffic detours, or storm water runoff



from construction activities. Issues are similar to other water quality concerns with sedimentation, erosion, and introduction of pollutants.

### ***Mitigation***

An erosion control and sediment plan will be prepared and maintained in compliance with CWA Section 402 / MPDES regulations.

The contractor will be expected to comply with applicable permits and authorizations including CWA Section 404, SPA 124, and MS4. The contractor will also be expected to adhere to MDT BMPs and the recommended BMPs as applicable in the MS4 for erosion and sediment control.

To reduce the spread and establishment of noxious weeds and re-establish permanent vegetation, disturbed areas within MDT ROW or easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting.

### **Vegetation**

Short-term construction impacts would occur along the roadway, including temporary habitat and vegetation loss. These temporary impacts would vary by species type, depending on their recovery rates. The ultimate recovery of vegetation depends on the management of the area after construction. Other temporary direct impacts include the modification of vegetation communities from fuel spills and solid compaction as a result of construction access and activities.

### ***Mitigation***

To reduce the spread and establishment of noxious weeds and to re-establish permanent vegetation, disturbed areas within MDT ROW and easements will be seeded with desirable plant species, as recommended by the MDT Botanist. Revegetation will be conducted in accordance with MDT Standard Specifications. Following construction, noxious weeds will be controlled by MDT, County Weed Board, or the City depending on final permitting. An erosion control and sediment control plan will be prepared in compliance with Section 402/ MPDES regulations.

### **Wildlife and Migratory Birds**

Short-term construction related impacts could include displacement of wildlife and migratory birds from human-related, noise disturbance and water quality degradation from work in and near water bodies in the area. Noise produced by construction equipment on the proposed project would occur with varying intensity and duration during the phases of construction. However, because of the different phases of construction, no single location would experience a long-term period of construction noise. Wildlife and migratory bird populations found in these areas are likely to be accustomed to periodic noise intrusions, due to roadway traffic, agricultural equipment, and noise from local residents, but some brief displacement of wildlife and migratory bird populations may occur during construction. Noise from construction may displace terrestrial wildlife and migratory birds temporarily, but they would likely return after construction is completed.

Potential introduction of chemicals or runoff from construction activities into water bodies could impact wildlife or migratory bird species that rely on water bodies.

### ***Mitigation***

Mitigation measures described under Water Resources/Quality will minimize impacts to wildlife and migratory bird habitat.

### **Aquatic Species**

Short-term construction-related impacts could include displacement of fish from human-related activities and additional sedimentation and turbidity as a result of work in and near water bodies located in the project area. Culvert construction would require work within and immediately adjacent to Hogan's Slough. These construction activities are likely to create disturbances from operating construction equipment and could cause some brief displacement of fish in this water body; however, these fish would likely return after construction is complete. Construction activities also have potential to increase sediment and turbidity levels in Hogan's Slough during and immediately following construction. Such increases could affect aquatic species, if they are present, within the area downstream of the construction area. Potential sedimentation and turbidity increases resulting from clearing and grading activities are generally short term and would subside following project completion.

### ***Mitigation***

Mitigation measures described under Water Resources/Quality will minimize impacts to wildlife and aquatic species habitat.

### **Air Quality**

Air quality related to construction would be limited to short-term increases in fugitive dust (dust in the air) and mobile sources. Fugitive dust is airborne particulate matter that generally cannot reasonably be captured through a control device. Trucks and other earth-moving vehicles operating around the construction sites would generate construction-related fugitive dust. The dust would be due primarily to particulate matter re-suspended by vehicle movement over paved and unpaved roads and other surfaces, dirt tracked onto paved surfaces from unpaved areas at access points, material blown from uncovered haul trucks, and other earthmoving activities.

Carbon monoxide (CO) is the principal pollutant of concern when considering localized air quality impacts of motor vehicles. Because CO emissions from motor vehicles increase with decreasing vehicle speed, disruption of traffic during construction is likely to result in short-term increases to local CO concentrations.

### ***Mitigation***

Fugitive dust and mobile source emissions will be minimized via adherence to MDT Standard Specifications, which will limit clearing and grubbing; specify re-seeding procedures; require use of water or chemical dust suppressant; require that contractors operate in compliance with air quality standards established by federal, state, and local agencies; and require the development of a construction traffic control plan, which will minimize disruption of traffic and associated engine idle time.

## **3.6 CUMULATIVE IMPACTS**

Cumulative effects are those impacts that result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency

(federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Generally, significant cumulative impacts result when (1) resources are vulnerable to cumulative effects (e.g., wetlands), (2) the same type of impact is occurring from multiple projects (e.g., multiple road construction projects), (3) effects have been historically significant for a resource (e.g., a non-attainment area for air quality), or (4) other analyses have identified cumulative effects as a concern in the project area. Examples of actions that were analyzed for cumulative effects include road construction, development, mining, and agricultural practices.

Cumulative impacts would not be expected for resources not present in the corridor or where no impacts were identified for this proposed project. Therefore, the following resources would not be addressed in the cumulative impacts section:

- Energy
- Environmental Justice
- Local and Regional Economics
- Wild and Scenic Rivers
- Parks and Recreation/L&WCF – Section 6(f)
- Air Quality
- Utilities
- Threatened and Endangered Species

The ongoing transition of the project area from rural to urban land use is well documented in local planning documents including the *West Billings Plan* (City/County, 2001) and the *2003 Growth Policy Plan* (City/County, 2003). Since 1978, a shift from agricultural uses to urban uses has been evident as the urban area of the City pushes westward. Urban developments, including residential, commercial, and industrial, have increased in West Billings resulting in an average decline of 65 ha (160 ac) per year of land utilized for productive agriculture. Agricultural land is being subdivided at an increasing rate, and a substantial number of housing units are being constructed. Between 1978 and 1997, the total amount of developed land or land planned for development increased by about 35 percent and the amount of land in agricultural use decreased by about 42 percent. This growth would continue to happen without the proposed improvements to the Shiloh Road corridor. As a result, the improvements to the corridor would not induce growth in this area, but would rather accommodate the current growth occurring in the corridor.

In 2000, the completion of the Shiloh Interchange at I-90 (which connects I-90 to Shiloh Road via Zoo Drive) introduced substantially more traffic to Shiloh Road and established Shiloh Road as a primary north-south route for drivers in West Billings. The *West Billings Plan* designated Shiloh Road as a “major community entryway corridor” and set goals for special design standards for the reconstruction of the corridor.

Multiple projects have been recently completed or are currently underway in the project area as shown in Table 3.26.

**Table 3.26 Current and Recently Completed Projects in the Project Vicinity**

Project Name/Location	Project Description
<b>MDT Projects</b>	
Shiloh Interchange project (Zoo Drive from I-90 to Shiloh Road and Shiloh Road from BBWA Canal to just north of the Canyon Creek culvert).	MDT interchange project that connects Shiloh Road to I-90 – completed and opened October 23, 2000.
Canyon Creek Bridge guardrail.	MDT installed new guardrail on the Canyon Creek Bridge in 2004.
<b>Local City/County Projects</b>	
SID 1371 – Poly Drive to Rimrock Road.	The City of Billings upgraded this segment of Shiloh Road to a five-lane facility in 2005.
Temporary Traffic Signal – Shiloh Road and Central Avenue.	City CIP ENG T007 – signal to be used until the MDT Shiloh Road Corridor project is completed.
<b>Private Sector Projects</b>	
The Pierce Parkway/Zoo Montana/Shiloh Road intersection – south of the Canyon Creek culvert to approximately 152 m (500 ft) south of Zoo Montana's access.	Completed in June 2002.
Gabel Connection (Zoo Drive to Hesper Road).	New road segment completed in Fall 2004 that connects Zoo Drive with Hesper Road and 32 <sup>nd</sup> Street West.
Park Land West Subdivision: SW corner of Central Avenue and 32 <sup>nd</sup> Street West.	Commercial development currently under construction (2/06).
Montana Sapphire Subdivision: West side of Shiloh Road south of King Avenue.	Commercial development – infrastructure is completed and lots are being sold for development.
Broso Valley Park Subdivision: Between Zoo Drive, Hesper Road, Gable Road and 32 <sup>nd</sup> Street West.	Completed in February 2006.
Shiloh Business Park Subdivision: South of Zoo Drive and east of Shiloh Road.	Completed in February 2006.

Source: Engineering, Inc., June 2006 – personal communication

Numerous planned roadway projects have been identified in the Billings Area and are listed in Table 3.27. These projects include new streets, extensions and expansions of existing streets, as well as some safety related improvements. Numerous other development projects have also been identified in the Billings Area and the project vicinity, which are listed in Table 3.28. Most of these projects are planned private sector projects in the project area including residential, commercial, and mixed use developments.

**Table 3.27 Planned Roadway Projects in the Billings Area**

Project Name	Project Description
<b>MDT Projects</b>	
Big Ditch – 9 km (5.6 mi.) west of Billings (CN 4844).	Bridge replacement on S-532 RP 13.78.
West Billings – King Avenue Bridge Replacements on U-1010 RP 2.70 and RP 2.92 (CN 1050).	Bridge replacement on U-1010 RP 2.70.
Rimrock Road – Shiloh Road to 54 <sup>th</sup> Street West Billings (CN 5035).	Reconstruction on U-1034 at RP 2.32.

**Table 3.27 Planned Roadway Projects in the Billings Area (cont.)**

Project Name	Project Description
<b>MDT Projects (cont.)</b>	
2002 – Shiloh Road/Monad Road Turn Bay (CN 5393).	Deceleration lane.
Billings Airport Road (CN 4734).	Intersection improvements at MT 3.
2002 – Safety Improvement Billings (CN 5390).	Safety (I-90, US 212 and US 87).
Main Street – Billings Heights (CN 3440).	Intersection upgrades/signals (US 87).
I-90 Interchange Study – Billings (CN 4917).	Corridor study (I-90, US 212 and US 87).
Bench Boulevard – Billings MT 1036(1)(8) (CN 6041).	Lake Elmo Road to US 87. Reconstruction and widening of U-1036.
Bench Connection – MT0CM 1099 (32) (CN 4553).	6 <sup>th</sup> Avenue North to Bench Boulevard. Construction of new connection between 6 <sup>th</sup> Avenue North and U-1036 across Alkali Creek.
Zimmerman Trail – Billings MT 1001(2) (CN6040).	Reconstruction/widening.
<b>Local City/County Projects</b>	
Poly Drive Extension.	City CIP ENG N002 – new construction and utility improvements between Westfield Drive and Aspen Way.
King Avenue West.	City CIP ENG R007 – street widening, utility and storm drainage improvements from Shiloh Road to 31 <sup>st</sup> Street West.
Poly Drive Improvements.	City CIP ENG 24 – improvements from 32 <sup>nd</sup> Street. West to 38 <sup>th</sup> Street West.
<b>Private Sector Projects</b>	
Broadwater Avenue Extension – West of Shiloh Road.	Extension of Broadwater Avenue from Shiloh Road to 54 <sup>th</sup> Street West.
East Approach of Poly Drive to Shiloh Road.	Two-lane extension of Poly Drive to be completed in 2006.

Source: MDT. 2006 *Montana State Transportation Improvement Program*  
City of Billings. 2006-2011 *City of Billings Capital Improvement Program*  
Montana Department of Transportation, December 2006 – personal communication

**Table 3.28 Other Planned Projects in the Billings Area**

Project Name	Project Description
<b>MDT Projects</b>	
Big Ditch Trail – Billings (CN 5908).	Bike/pedestrian facilities.
<b>Local City/County Projects</b>	
<i>Billings West End Storm Drainage Master Plan</i> (May 1991).	Plan calls for a green belt concept to be implemented for the area west of Shiloh Road. The recommended configuration of green belts would include using Hogan's Slough as the primary channel in which a wide overland flow corridor would be maintained within which 100-year flood flows would be contained.

**Table 3.28 Other Planned Projects in the Billings Area (cont.)**

Project Name	Project Description
<b>Local City/County Projects (cont.)</b>	
<i>Heritage Trail Plan (2004).</i>	City/County plan to increase the opportunities for non-motorized travel in Billings and surrounding areas of Yellowstone County. The plan proposes an off-street multi-use path along Shiloh Road as well as four separated grade crossings along Shiloh Road for planned on-street and off-street paths.
Shiloh Road Area Water and Sanitary System.	The City is proposing to modify the water and sanitary sewer systems in the Shiloh Road area in order to accommodate the anticipated future development to the west of Shiloh Road.
Big Ditch Bike Path.	City CIP PL602 – construction of 3-m (10-ft) wide pedestrian/bicycle path from Shiloh Road to Rimrock West Park.
Gable Road Bike Path.	City CIP PL0601 – construction of 3-m (10-ft) wide pedestrian/bicycle trail connecting the West End Trail with ZooMontana.
Yegen Drain Capacity.	City CIP ENG D003 – addressing capacity issues at outfall into the Yellowstone River.
<b>Private Sector Projects</b>	
R.F. Development/Properties Subdivision/ Hancock Subdivision: commercial/retail development SE of the Shiloh Interchange.	38 parcels total – construction on 19 of the parcels is expected within five years.
Brosovich Masterplan: commercial/retail development between Hesper Road and I-90 – East of Shiloh Road.	52 parcels total – construction on 19 of the parcels is expected within five years.
Pierce Mobile Home and RV Center: south of Pierce Parkway and east of Shiloh Road.	Expansion of existing RV Center to include a new area for RV rental.
Shiloh Business Park Subdivision and William D. Pierce Subdivision: commercial/retail development south of Zoo Drive and east of Shiloh Road.	20 parcels total – construction on 12 of the parcels is expected within five years.
Transtech Center Subdivision: commercial development east of Shiloh Road and south of the BBWA Canal.	47 parcels total – development on five parcels is complete; five parcels projected for construction within five years.
Willow Bend Subdivision: residential development south of King Avenue and east of Shiloh Road.	Expansion of existing mobile home park – additional 400 units planned.
CERT 1319: south of King Avenue and east of Shiloh Road.	Planned multi-family residential development.
CERT 1349: south of King Avenue and east of Shiloh Road.	Planned park.
CERT 2560: south of King Avenue and east of Shiloh Road.	Master planned for retail/commercial. Not yet platted.
Residential: west of Sharptail.	40 single-family homes planned for 2006. Unsure of build-out number.

**Table 3.28 Other Planned Projects in the Billings Area (cont.)**

Project Name	Project Description
<b>Private Sector Projects (cont.)</b>	
Montana Sapphire Subdivision: west side of Shiloh Road south of King Avenue.	Commercial development – infrastructure is completed and lots are being sold for development.
Olympic Subdivision commercial development: NE corner of King Avenue and Shiloh Road.	Planned for a gas station and video rental – projected construction for 2009/2010.
Village Subdivision: west of Shiloh Road between Monad Road and King Avenue.	Platted for mixed use including residential, commercial, and medical – construction projected for 2009/2010. Also includes two new local streets connecting with Shiloh Road.
Emmanuel Baptist Church: NW corner of Shiloh Road and Monad Road.	Planned expansion within next two years.
Residential development: south of Central Avenue between 36 <sup>th</sup> and 32 <sup>nd</sup> Streets West.	Planned residential – construction projected within five years.
Park Land West Subdivision: SW corner of Central and 32 <sup>nd</sup> Street West.	Commercial development currently under construction.
Billings Tech Center Campus: north of Central Avenue and east of Shiloh Road.	College will undergo \$9M expansion – the RFP is out (8/05).
Shiloh Corner: NE corner of Shiloh Road and Central Avenue.	Commercial development projected within next five years.
Faith Chapel: east of Shiloh Road between Central Avenue and Broadwater Avenue.	Planned expansion within next two years.
Yegen property: both sides of Shiloh Road between Grand Avenue and Broadwater Avenue.	In master planning process for mixed use including residential, professional, commercial.
Hancock-Grand Subdivision: east of Shiloh Road and north of Grand Avenue.	Office space, bank, and two assisted living facilities currently under construction.
Autumn Sub and Windham West: between Grand Avenue and Colton Boulevard west of 32 <sup>nd</sup> Street West.	Residential /commercial – construction expected within five years.
Goodman Subdivision: West of Shiloh Road between Avenue B and Waterford Drive.	60 single-family homes currently under construction.
Rimrock West Estates: south of Rimrock Road and west of Shiloh Road.	Approximately 30 lots left for development – construction expected within two years.
Silver Creek Subdivision: west of 46 <sup>th</sup> Street West between Grand Avenue and Rimrock Road.	200 single-family homes platted.
Mission United Subdivision: east of Shiloh Road between Colton Boulevard and Rimrock Road.	Assisted living facilities – construction expected within two years.

Source: Engineering, Inc., June 2006 – personal communication  
MDT. 2006 *Montana State Transportation Improvement Program*  
City of Billings. 2006-2011 *City of Billings Capital Improvement Program*  
City of Billings, December 2006 – personal communication

**Traffic.** Roadway and development projects are actions that can lead to an increase in traffic or change in traffic patterns. The projects listed in Tables 3.26, 3.27, and 3.28 are likely to result in cumulative increases in traffic and changes in traffic patterns. The projected increase in traffic volumes, as discussed in Section 3.2.1, is one of the primary reasons that the Shiloh Road Corridor project is being proposed. Traffic generation from these and other long-range planned development

through the design year were included in the projected traffic volumes for Shiloh Road and adjacent side-streets.

**Land Use.** Past, present, and foreseeable future urban development has and would contribute to cumulative effects on agricultural land in the project area. Urban developments, including residential, commercial, and industrial, have increased in West Billings contributing to an average decline of 65 ha (160 ac) per year of land utilized for productive agriculture in Yellowstone County. This growth would continue to happen without the proposed improvements to the Shiloh Road corridor. As a result, the improvements to the corridor would not induce growth in this area, but would rather accommodate the current growth occurring in the corridor.

**Wetlands.** Road construction, development activities, and past agricultural and mining operations can be contributing factors to the loss of wetlands in the project area, and the proposed project is expected to contribute to these impacts. Cumulative effects to the loss of wetlands, including direct loss of wetlands and indirect effects of contamination, sedimentation, and reduced wetland functions, would likely occur from the activities listed Tables 3.26, 3.27, and 3.28. Because agriculture is the primary land use in the study area, it seems likely that agriculture is the primary reason for the loss of wetlands in the region historically; however, the past 20 years has seen a shift in this trend as the urban area of Billings pushes westward. Urban expansion in and around the project area is expected to continue into the future and could contribute to direct and indirect wetland impacts.

MDT policy is to avoid and minimize impacts to wetlands, and if wetlands are impacted as a result of an individual highway project, MDT would mitigate for jurisdictional and non-jurisdictional wetlands. MDT attempts to mitigate wetland impacts within the same watershed where the impacts occurred. Thus, each individual MDT project identified in Tables 3.26, 3.27, and 3.28 would mitigate for its own impacts. This project's contribution to these cumulative impacts would be minor when compared to all other contributing activities.

**Vegetation.** Road construction, development activities, and past agricultural and mining operations can be contributing factors to the loss of vegetation and the introduction of noxious weeds, and the proposed project is expected to contribute to these impacts. While cumulative effects to the loss of vegetation and introduction of noxious weeds would likely occur from these activities, this project's contribution to these cumulative impacts would be minor when compared to all other contributing activities.

**Wildlife and Migratory Birds.** Road construction, development activities, and past agricultural and mining operations can be contributing factors to the decrease in the amount and diversity of wildlife and migratory bird species from fragmentation, alteration, and loss of habitat; water quality degradation; and increased mortality from conflicts with vehicles within the project area and outlying areas, and the proposed project is expected to contribute to these impacts. Cumulative impacts to habitat, water quality, and wildlife mortality could occur from these activities. This project's contribution to these cumulative impacts would be minimal because the additional roadway area represents a small change in the land use compared to the overall past, present, and on-going activities in the corridor.

**Aquatic Species.** Road construction, development activities, and past agricultural and mining operations can be contributing factors to the degradation of fish habitat in Hogan's Slough and Canyon Creek from contaminants, increased water temperature, and loss of riparian habitat, and the proposed project is expected to contribute to these impacts. While cumulative effects to the degradation of fish habitat would likely occur from these activities, this project's contribution to these cumulative impacts is minimal because the proposed project represents a small proportion of the activities that contribute



to the degradation of fish habitat compared to the overall past, present, and reasonably foreseeable future activities in the corridor.

**Threatened and Endangered Species.** There would be no impacts to threatened, endangered, proposed, or candidate species, nor to critical habitat from the proposed project, including secondary or cumulative impacts.

## 4.0 PERMITS AND AUTHORIZATIONS

The permits and authorizations listed below may be required for the Preferred Alternative:

- Section 402/Montana Pollutant Discharge Elimination System (MPDES) authorization from MDEQ Permitting and Compliance Division. The MPDES permit requires a storm water pollution prevention plan (SWPPP) that includes a temporary erosion and sediment control plan. The erosion and sediment control plan identifies BMPs, as well as site-specific measures to minimize erosion and prevent eroded sediment from leaving the work zone.
- Clean Water Act (CWA) Section 404 permit from the US Army Corps of Engineers (COE) for any activities that may result in the discharge or placement of dredged or fill materials in waters of the US, including wetlands.
- Compliance with Montana Fish, Wildlife and Parks (MFWP)-Fisheries Division Montana Stream Protection Act (SPA 124) is required for projects that may affect the bed or banks of any stream in Montana.
- Short-Term Water Quality Standard for Turbidity related to construction activity (318 Authorization) from the MDEQ-Water Quality Bureau for any activities that may cause unavoidable violations of state surface water quality standards for turbidity, total dissolved solids or temperature.

In addition to the permits listed above, the following compliance is required.

- Compliance with mitigation stipulations of the Programmatic Agreement for Nationwide Section 4(f) Evaluation for Minor Impacts on Historic Sites.

## **5.0 COMMENTS AND COORDINATION**

The procedures for implementing NEPA and preparing an environmental assessment emphasize cooperative consultation among agencies and the early and continued involvement of people who may be either interested in or affected by the project. This chapter documents the specific elements of the public and agency involvement.

### **5.1 AGENCY COORDINATION**

The following agencies were contacted via a letter at the beginning of the study process and were asked to provide information and identify issues pertaining to the proposed project (See Appendix B, Agency Coordination).

#### **5.1.1 Agencies with Jurisdiction and/or Permitting Authority**

The following agencies were consulted regarding their specific areas of interest and authority pertaining to the proposed project.

- US Army Corps of Engineers
- US Environmental Protection Agency
- US Fish and Wildlife Service
- US Department of Agriculture – Natural Resource Conservation Services
- US Department of the Interior – Bureau of Land Management
- Montana Department of Environmental Quality
- Montana Department of Natural Resources and Conservation
- Montana Fish, Wildlife and Parks

#### **5.1.2 Cooperating Agencies**

The City of Billings, Yellowstone County, and four of the agencies listed above were requested and accepted as cooperating agencies. Cooperating agencies are those that assist in the review process of the EA. These agencies help to determine and to review the issues that need to be addressed during the environmental documentation process and how to mitigate impacts to environmental resources that may result from the project. The following agencies are those that agreed to be the cooperating agencies for this project:

- US Army Corps of Engineers
- US Fish and Wildlife Service
- Montana Department of Environmental Quality
- Montana Fish, Wildlife and Parks
- Yellowstone County

- City of Billings

Refer to Appendix B for letters from these agencies. Additionally, MDT conducted 15 meetings with the City and/or County between March 2005 and January 2006, to discuss various project issues.

### **5.1.3 Other Agencies and Groups**

In addition to agencies with jurisdiction and/or permitting authority, the following agencies and groups were contacted to gather information and comments about the project. See Chapter 7.0, Distribution List, for addresses of agencies.

- Billings K-12 Schools, District 2
- Montana Natural Heritage Program
- Montana State Historic Preservation Office
- Yellowstone Conservation District

## **5.2 PUBLIC INVOLVEMENT**

The Public Involvement Plan for this project adheres to the guidance listed in the MDT Public Involvement Handbook (1998), and includes all of the activities recommended for a “Level C” project (Environmental Assessment) as well as some elements recommended for a “Level D” project (Environmental Impact Statement). The Public Involvement Plan is on file with MDT Environmental Services. The mission of the public involvement plan is to actively involve the public and local businesses in the planning of the corridor, and to create an environment that is open, participatory, and responsive. See Appendix G for additional public involvement material.

### **5.2.1 Public Meetings**

MDT and FHWA hosted three public meetings during the development of the EA. The first public meeting was held on January 30, 2003. Approximately 60 people attended the meeting, which was an open house format with a presentation. The purpose of this meeting was to present information about the proposed project and the EA to the public and gather input on the community’s ideas and expectations about the present and future corridor.

The second public meeting was held on January 25, 2005. Approximately 80 people attended the meeting, which was an open house format with a presentation. The purpose of this meeting was to present the conceptual alternatives and gather information and comments from the property owners and residents affected by the roadway reconstruction.

The third public meeting was held on July 26, 2006. Approximately 100 people attended the meeting. The purpose of this meeting was to present the project status, review the final alternatives to be assessed, and obtain input from the public on the final alternatives. The meeting was an open house format with a presentation.

During and since the first public meeting, MDT, FHWA, and the consultant team have received over two hundred written comments and a petition. Public comment summaries for various issues are listed in Table 5.1.

**Table 5.1 Summary of Public Comments**

(Comments through December 15, 2006)

Issues	Summary of Issues and Concerns	Number of Comments	Percent of Total Comments
<b>Roadway</b>	Comments were received supporting both the rural and urban alternatives. Main concerns/suggestions regarding the roadway were about curb and gutter; roadway width; roadway fill; turn lanes; number of travel lanes; types of lane markings; and median options. Constructing an elevated overpass above Shiloh Road was also suggested.	34	11%
<b>Intersection</b>	Comments were received both in support and in opposition to the concept of constructing roundabouts on the Shiloh Road corridor. Support for roundabouts focused on aesthetics and traffic calming benefits. Opposition to roundabouts focused on potential impacts to businesses, difficulty of use by trucks with trailers and other drivers who are not familiar with roundabouts, and lack of efficiency. A petition opposing the construction of roundabouts in the corridor was submitted to MDT. <sup>1</sup>	82	25%
<b>Design Treatment/ Lighting</b>	Suggestions and comments received focused mainly on the aesthetics of the corridor: hiding utility lines, eliminating billboards, decorative lighting, energy efficient lighting, roundabout fountains, landscaping, covering the Shiloh Drain, and entryway concept.	41	13%
<b>Pedestrian/Bicycle Issues</b>	All comments received were supportive of the project's provision of a better environment for pedestrians/bicyclists – constructing a sidewalk and multi-use path, and lowering speed limits, providing over/underpasses, etc.	19	6%
<b>Other Design Concerns</b>	Comments received included installing extra-long left-turn lanes, and turn lanes with arrow signals; truck route recommendations; ability to accommodate 210 foot trucks; providing access roads; and providing a traffic signal at Central. A 45 mph speed limit was suggested. There was concern that the City's project between Poly Drive and Rimrock Road be consistent with this project. Installing a berm and lowering the roadway at the townhomes was also suggested. It was suggested that the Complete Streets information would be helpful in designing the Shiloh Road Corridor project.	13	4%
<b>Access</b>	Questions were raised about how access to the hospital will be affected, especially during construction, and there was concern about limiting driveway access, and access to Decathlon Parkway. Property owners also expressed concern related to providing access to future development at properties along Shiloh Road.	21	7%
<b>Traffic/Road Conditions</b>	Concerns were received regarding current road conditions; traffic congestion and volumes at intersections; and providing alternate truck routes for heavy truck traffic.	14	4%
<b>Safety</b>	Concerns were received involving safety of drivers and pedestrians if roundabouts are constructed; safety of pedestrians if drivers use Decathlon Parkway as a short cut; safety of pedestrians and bicyclists crossing the road; driving conditions during blizzards; and visibility when the wind gusts and dust flies.	15	4%

**Table 5.1 Summary of Public Comments (cont.)**

(Comments through December 15, 2006)

Issues	Summary of Issues and Concerns	Number of Comments	Percent of Total Comments
<b>Drainage/Flooding</b>	Concerns were received regarding drainage and flooding related to storm water runoff and how it will be handled, including Hogans Slough.	14	4%
<b>Community Impacts</b>	Main concerns were related to noise and how it will be handled during and after construction. Other issues included air and light pollution, vibration from large trucks, and impacts to property and structures.	21	7%
<b>Economic Impacts</b>	Concerns were received about future potential costs to property owners, including maintenance costs, lighting, etc.	12	4%
<b>Irrigation/Farmlands</b>	Comments were received concerning water recharge for agriculture and acquisition of farmland.	2	1%
<b>Construction Impacts</b>	Questions were raised as to how long construction will last; how exactly the surrounding community will be affected; and the number of wetlands impacted in Hogan's Slough area. Suggested the possibility of closing off portions of Shiloh during construction.	8	2%
<b>Public Outreach</b>	Requests were made to better educate the public regarding traffic modeling, and ROW acquisition. In addition, more information was requested on roundabouts, including examples of other locations with a series of roundabouts constructed in one corridor, and how roundabouts operate.	10	3%
<b>Other</b>	Questions were raised about who will maintain Shiloh Road after project completion; what concepts the study actually focuses on; if the City was consulted; and basic geographical questions.	10	3%
<b>Project Schedule/Administration</b>	Concern was raised that this project should be done as quickly as possible.	6	2%
<b>Total Number of Comments</b>		<b>322</b>	<b>100%</b>

<sup>1</sup> A petition with 108 signatures was submitted to MDT.

### 5.3 OTHER PUBLIC INVOLVEMENT AND INFORMATION ACTIVITIES

#### 5.3.1 Project Advisory Committee

The Shiloh Road Corridor Project Advisory Committee was formed to accomplish the following primary goals with the project team:

- Confirm transportation and design goals for the corridor
- Assist in developing a vision for the corridor
- Identify the range of transportation improvements to be studied
- Assist in the development, evaluation, and refinement of alternatives
- Consult with and represent the corridor and community interests

The following Project Advisory Committee meetings were held:

<b>Meeting Date</b>	<b>Meeting Topic</b>
December 4, 2002	Project overview; advisory committee roles and responsibilities; NEPA process; and community involvement process.
January 21, 2003	Identification of corridor opportunities and constraints; overview of completed stakeholder interviews; information on access control; and public meeting preparation.
June 27, 2003	Land use and growth projection methodology; study area growth characteristics; community involvement; and environmental studies progress.
January 8, 2004	Project status; traffic modeling results; preliminary traffic engineering; design elements; and community involvement.
January 6, 2005	New project extension; traffic analysis results; preliminary alternatives; second public meeting; and community involvement.
February 24, 2005	Summary of public input; presentation of alternatives; obtain consensus on alternatives to be carried forward into detailed evaluation; and alternatives considered but eliminated.
July 28, 2005	Verify intersection and corridor alternatives to be carried forward for evaluation in the EA; determine if additional criteria pertaining to intersections should be included in the project design criteria; and confirm jurisdictions/responsibilities for corridor improvements.
September 15, 2005	Review of project purpose and need and the alternatives development process; summary of community and agency input; and group work sessions on impacts related to traffic, access, natural resources, community resources, adjacent property and businesses.
April 6, 2006	Provide updated information on conditions in the corridor; identify new alternatives to address the change in corridor conditions; and comparison and screening of alternatives.
August 30, 2006	Review the preliminary evaluation of alternatives and public comments, and obtain a recommendation on the preferred alternative.

### **Stakeholder Interviews**

Four stakeholder interviews were conducted to identify key project issues and refine the public involvement program. These interviews were conducted on October 22, 2003.

### **Small Group Meetings**

The project team held more than 30 meetings between October 2003 and October 2006 on specific issues as necessary during the development of alternatives. At these meetings, the project team addressed topics such as business community issues, property owner concerns, utilities, landowner planned development, land master planning, bicycle/pedestrian issues, and elements of the alternatives.

### **5.3.2 Newsletters**

Three project newsletters were distributed during the course of the project to keep the public informed of current activities. These newsletters were distributed to more than 1,000 individuals and organizations. The newsletters were distributed prior to each public meeting to announce the meeting and provide information about the project.

### **5.3.3 Media**

Press releases were issued at key points during the project and to announce public meetings. The following newspapers and radio stations were sent copies of all press releases:

- KULR 8 - Community Calendar
- KSVI 6 - Community Calendar
- KTVQ 2 - Community Calendar
- Billings Gazette
- Billings Outpost
- Radio KBLG

### **5.3.4 Project Web Site**

A project Web site <http://www.shilohroadcorridor.com/> has been maintained during the project which contains information about the project, project contacts, activities scheduled, project meeting information and summaries, and general project updates.

## **5.4 FUTURE PUBLIC INVOLVEMENT ACTIVITIES**

The following activities will be undertaken:

- Publish two newsletters:
  - One to announce the Public Hearing and Notice of Availability of Environmental Assessment
  - One to summarize the Public Hearing
- Post Notice of Availability of Environmental Assessment
- Conduct Public Hearing

## **5.5 OPPORTUNITIES FOR COMMENTS**

Copies of this EA are available to review at the following locations:

### **MDT Billings District Offices**

424 Morey St.  
Billings, MT 59104-0437



**City of Billings Planning and Community Services Department**

510 North Broadway, 4th Floor Parmly Library  
Billings, Montana 59101

**MSU Billings Library**

1500 University Drive  
Billings, MT 59102-0298

**Will James Middle School**

1200 30th St. West  
Billings, MT 59102

**MDT Web Site**

[www.mdt.mt.gov/pubinvolve/eis\\_ea.shtml](http://www.mdt.mt.gov/pubinvolve/eis_ea.shtml)

Written comments related to this document will be accepted during the public comment period specified on the cover page. Please direct comments to:

Jean Riley  
Environmental Services Bureau Chief  
Montana Department of Transportation  
2701 Prospect Avenue  
PO Box 201001  
Helena, MT 59260-1001  
Fax number: 406-444-7245

Comments can also be submitted on the MDT Web site at:  
[www.mdt.mt.gov/pubinvolve/eis\\_ea.shtml](http://www.mdt.mt.gov/pubinvolve/eis_ea.shtml)

## 6.0 LIST OF PREPARERS

The following is a list of the project team members that participated in the environmental documentation process for the Shiloh Road Corridor project.

Name and Title	EA Responsibility	Education and Certification	Experience
<b>Federal Highway Administration</b>			
Alan Woodmansey, PE Operations Engineer	Lead Agency	M.S. Engineering Management  B.S. Environmental Engineering	10 years experience in transportation engineering.
<b>Montana Department of Transportation</b>			
Jean Riley, PE Engineering Section Supervisor	EA Reviewer	B.S. Civil Engineering	Over 6 years experience in environmental in coal mining, 11.5 years with DEQ in environmental compliance and regulatory requirements. Over 4 years with MDT in project management and environmental.
Tom Martin, PE Consultant Design Engineer	EA Reviewer	B.S. Civil Engineering	10 years experience in design and project management of transportation facilities.
Fred Bente, PE Consultant Project Engineer	Project Manager EA Reviewer	B.S. Civil Engineering	Over 20 years experience in highway engineering, environmental review, and project management.
Bruce Barrett District Administrator Billings District	Public Involvement EA Reviewer		40 years with MDT, with experience in construction, equipment, and maintenance.
Gary Neville District Engineer Billings District	EA Reviewer	A.S. Civil Engineering Technology	Over 20 years experience in transportation in the engineering, management, and construction field with 5 years in the private consulting and construction sector and 17 years with MDT.
Heidy Bruner Project Development Engineer	EA Reviewer	B.S. Environmental Engineering	5 years in environmental engineering consulting specializing in air quality control for industrial sources, 2 years Environmental Manager for international mining and manufacturing corporation.
Jon Axline Historian	Cultural Resources	M.A. Western American History	16 years experience in historical and cultural resources development.

**List of Preparers (cont.)**

Name and Title	EA Responsibility	Education and Certification	Experience
<b>Engineering, Inc.</b>			
Michael Sanderson, MBA, PE Contract Manager	Alternatives Development, Public Involvement	B.S. Civil Engineering M.S. Civil Engineering MBA Professional Traffic Operations Engineer (PTOE)	Over 10 years of experience in traffic engineering and transportation planning.
Kirk Spalding, PE Project Manager	Alternatives Development, Roadway Design, Traffic Analysis, Public Involvement	B.S. Civil Engineering	Over 6 years in traffic engineering, comprehensive road design, and various civil engineering applications. Two years in hazardous waste remediation and storm water management.
<b>David Evans and Associates, Inc.</b>			
Debra Perkins- Smith, AICP Vice President, Environmental Manager	Alternatives Development, Public Involvement, Project Documentation	Master of Urban and Regional Planning B.A. Government	Over 24 years experience in transportation, environmental planning, and public involvement programs.
Laura Meyer, AICP Senior Environmental Planner	EA Task Manager, Alternatives Development, Public Involvement, Socio- economic Analysis, Section 4(f)/6(f) Analysis, Environmental Justice, Construction Impacts, Document Preparation	Master of Urban and Regional Planning B.A. Geography	Over 6 years of experience in impact analysis and documentation for multidisciplinary transportation, land use, and environmental projects.
Chad Ricklefs, AICP Senior Environmental Planner	Natural Resource Documentation, Document Preparation, Public Involvement	Master of Urban and Regional Planning B.A. Political Science and Environmental Conservation	5 years experience in environmental and urban planning, including public involvement programs.
Kara Showalter Junior Planner	GIS Analysis, Farmland Documentation	B.S. Civil Engineering	Experience in GIS analysis and impact documentation, for transportation and environmental projects.

### List of Preparers (cont.)

Name and Title	EA Responsibility	Education and Certification	Experience
<b>David Evans and Associates, Inc. (cont.)</b>			
Marilyn Kuntemeyer, PE	Transportation Documentation	M.S. Civil Engineering B.S. Civil Engineering	Over 25 years of experience in traffic engineering, traffic impacts analysis, roadway design, and public involvement.
David Armes Biologist	Biological Resources Documentation	B.S. Biology	Over 8 years of consulting in environmental regulatory and environmental compliance.
<b>Ayers Associates</b>			
Scott Hogan, PE Project Manager, Hydraulic Engineering	Hydraulic Assessment	M.S. Hydraulic Engineering B.S. Civil Engineering	Over 13 years experience in hydraulic analysis and design, specializing in bridge hydraulics, flood control, and channel stabilization.
<b>Big Sky Acoustics</b>			
Sean Connolly, PE President	Traffic Noise Modeling, Traffic Noise Impact Analysis	Master of Mechanical Engineering B.S. Mechanical Engineering	Over 20 years experience providing consulting services for noise assessment and acoustical design.
<b>Ethnoscience</b>			
Lynelle Peterson Senior Archaeologist	Cultural Resource Inventory	M.A. Anthropology B.A. Psychology	Over 20 years experience in archaeology and cultural resource management.
<b>EDAW</b>			
Jeff Bouma Landscape Architect	Visual Assessment Analysis	Masters of Landscape Architecture	Over 6 years of experience in landscape analysis, conceptual design, design and construction document production, construction administration, recreation planning and design.
<b>Terracon</b>			
Dan Nebel, PE Principal Associate and Engineering Geologist	Geotechnical and Hazardous Materials	B.S. Geology	30 years of experience in geologic, geotechnical, hydrogeologic, water resource, and environmental projects.

## 7.0 DISTRIBUTION LIST

### 7.1 FEDERAL AGENCIES

#### **US Army Corps of Engineers**

Helena Regulatory Office  
c/o Montana Department of Natural Resources and  
Conservation  
10 West 15<sup>th</sup> Street, Suite 2200  
Helena, MT 59601  
Mr. Allen Steinle, Montana Program Manager

#### **US Department of Agriculture – Natural Resource Conservation Service**

Billings Field Office  
1629 Avenue D, Building A, Suite 4  
Billings, MT 59102  
Ms. Valerie Robertson, District Conservationist

#### **US Environmental Protection Agency**

Region VIII, Montana Office  
301 South Park, Drawer 10096  
Helena, MT 59626  
Mr. John Wardell, Director

#### **US Department of Agriculture – Natural Resource Conservation Service**

Federal Building, Room 443  
10 East Babcock Street  
Bozeman, MT 59715  
Mr. Dave White, State Conservationist

#### **US Department of Interior – Bureau of Land Management**

5001 Southgate Drive  
PO Box 36800  
Billings, MT 59101  
Mr. Gene Terland, State Director

#### **US Fish and Wildlife Service**

Montana Field Office  
585 Shepard Way  
Helena, MT 59601  
Mr. R. Mark Wilson, Field Supervisor

### 7.2 STATE AGENCIES

#### **Montana Department of Environmental Quality**

Permitting and Compliance Division Lee Metcalf  
Building  
1520 East Sixth Avenue  
PO Box 200901  
Helena, MT 59620  
Mr. Tom Ellerhoff

#### **Montana Fish, Wildlife, & Parks**

2300 Lake Elmo Drive  
Billings, MT 59105  
Mr. Gary Hammond, Regional Supervisor  
Mr. Jim Satterfield, Regional Supervisor  
Mr. David Ellis

#### **Montana State Historic Preservation Office**

225 North Roberts  
PO Box 201201  
Helena, MT 59620  
Dr. Mark Baumler, State Historic Preservation  
Officer

#### **Montana Department of Natural Resources and Conservation**

Airport Industrial Park  
1371 Rimtop Drive  
Billings, MT 59105  
Mr. Keith Kerbel, Regional Manager

#### **Montana Natural Heritage Program**

Montana State Library  
1515 East Sixth Avenue  
Helena, MT 59620  
Ms. Sue Crispin, Director

#### **Montana Transportation Commission**

PO Box 201001  
Helena, MT 59620  
Mr. William T. Kennedy, Chairman

## 7.3 LOCAL AGENCIES

### **Billings City Council**

1945 Clark Avenue  
Billings, MT 59102  
Mr. Chris “Shoots” Veis, Ward 3 Council Member  
Ms. Nancy Boyer, Ward 4 Council Member  
Mr. Donald Jones, Ward 5 Council Member

### **City of Billings – City and County Planning**

PO Box 1178  
Billings, MT 59103  
Ms. Candi Beaudry, Director  
Mr. Scott Walker, Transportation Planner

### **City of Billings – Public Works**

PO Box 1178  
Billings, MT 59103  
Mr. David Mumford, Director  
Mr. Vern Heisler, City Engineer

### **Yellowstone Conservation District**

1371 Rimtop Drive  
Billings, MT 59105-1978  
Ms. LaVerne Ivie, Administrator

### **Yellowstone County Planning Board**

PO Box 20377  
Billings, MT 59104  
Mr. Doug Clark

### **City of Billings**

PO Box 1178  
Billings, MT 59103  
Christina Volek – City Manager

### **City of Billings – Metropolitan Transit**

PO Box 1178  
Billings, MT 59103  
Mr. Ron Wenger, Transit Manager  
Ms. Debra Hagel

### **K-12 Billings School District 2**

415 North 30<sup>th</sup> Street  
Billings, MT 59101-1298  
Mr. Jack Copps, Superintendent

### **Yellowstone County Commissioners**

PO Box 35000  
Billings, MT 59104  
Mr. John Ostlund, Chairman

### **Yellowstone County Public Works**

PO Box 35024  
Billings, MT 59104  
Mr. Bob Moats, Director

## 8.0 LIST OF SOURCES/DOCUMENTS

### *Alternatives*

US Department of Transportation Federal Highway Administration and State of Montana Department of Transportation, June 1992. *Shiloh Road Interchange Yellowstone County, Montana Draft Environmental Impact Statement*.

US Department of Transportation Federal Highway Administration and State of Montana Department of Transportation, June 1993. *Shiloh Road Interchange Yellowstone County, Montana Attachment to the Draft Environmental Impact Statement (to constitute the Final EIS)*.

US Department of Transportation Federal Highway Administration and State of Montana Department of Transportation, October 1993. *Shiloh Road Interchange Environmental Impact Statement Record of Decision*.

### *Traffic*

City of Billings, August 1999. *Billings Urban Area 2000 Transportation Plan*.

City of Billings, May 2005. *Billings Urban Area 2005 Transportation Plan*.

Engineering, Inc., July 2005. *Preliminary Traffic Report*.

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MDT, 2005 – Email Correspondence with Mr. Roy Peterson.

Insurance Institute for Highway Safety, *Status Report*, Vol. 36, No.7, July 2001. “Roundabouts Reduce Traffic Backups as well as Crashes Involving Injuries.”

### *Access*

Dye Management Group, Inc., 1999. *Access Management Project*.

Montana Department of Transportation Functional Classification Map.

Engineering, Inc., 2005. *Access Control Report – Shiloh Road Corridor Phase I*.

### *Safety*

Engineering, Inc., July 2005. *Preliminary Traffic Report*.

### ***Pedestrians & Bicycles***

Bike Net, 1995. *Bicycle Plan for the Billings Urban Area Transportation Plan (BikeNet)*.

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## **Appendices**

**Appendix A Environmental Overview Maps**

**Appendix B Agency Coordination**

**Appendix C Farmland Conversion Impact Rating**

**Appendix D Programmatic Section 4(f) Evaluations**

**Appendix E Noise**

**Appendix F Cultural Resources**

**Appendix G Public Involvement Materials**

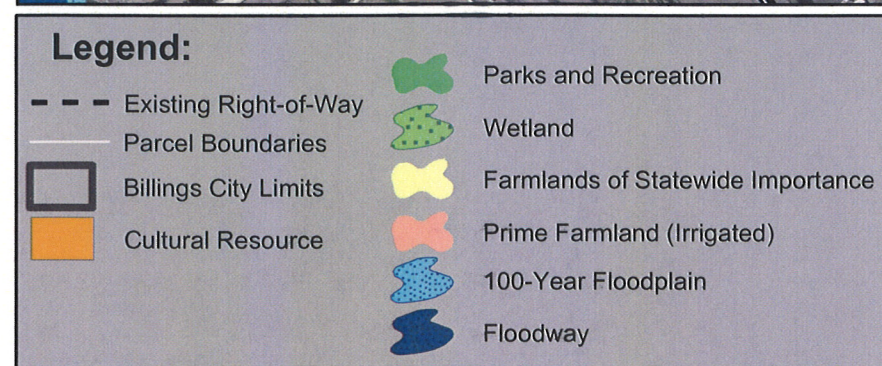
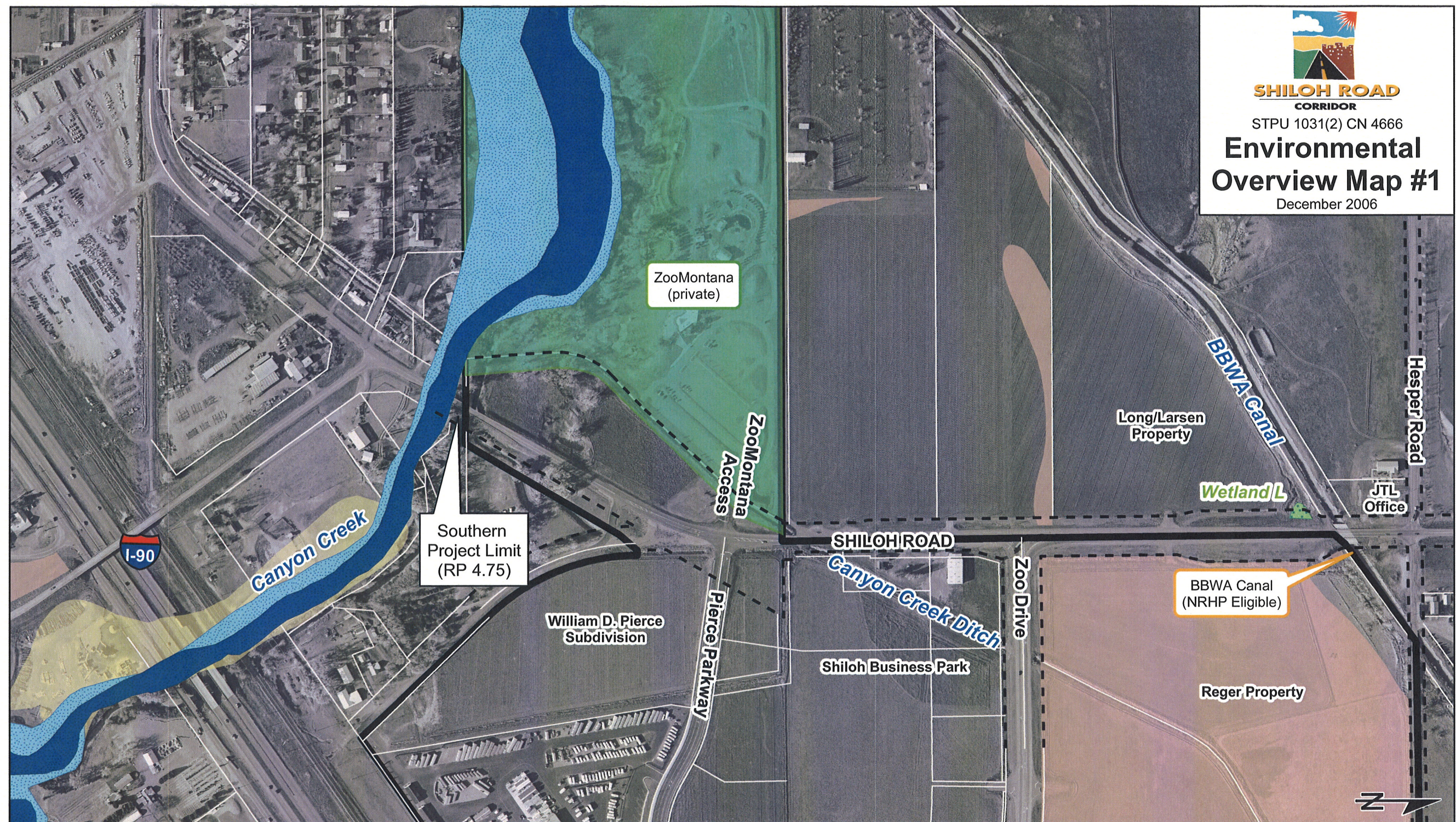




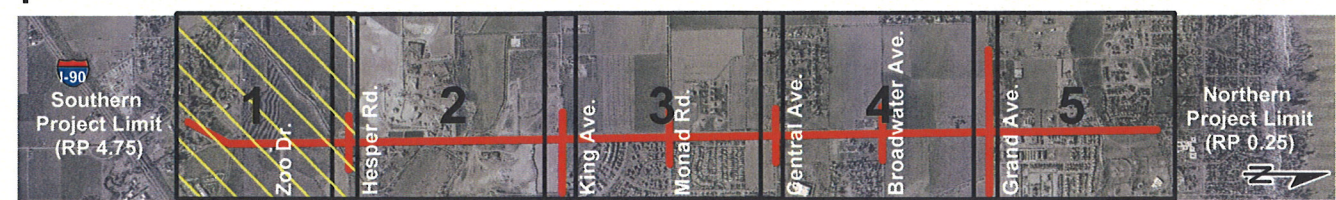
## **Appendix A      Environmental Overview Maps**







**Map Location:**



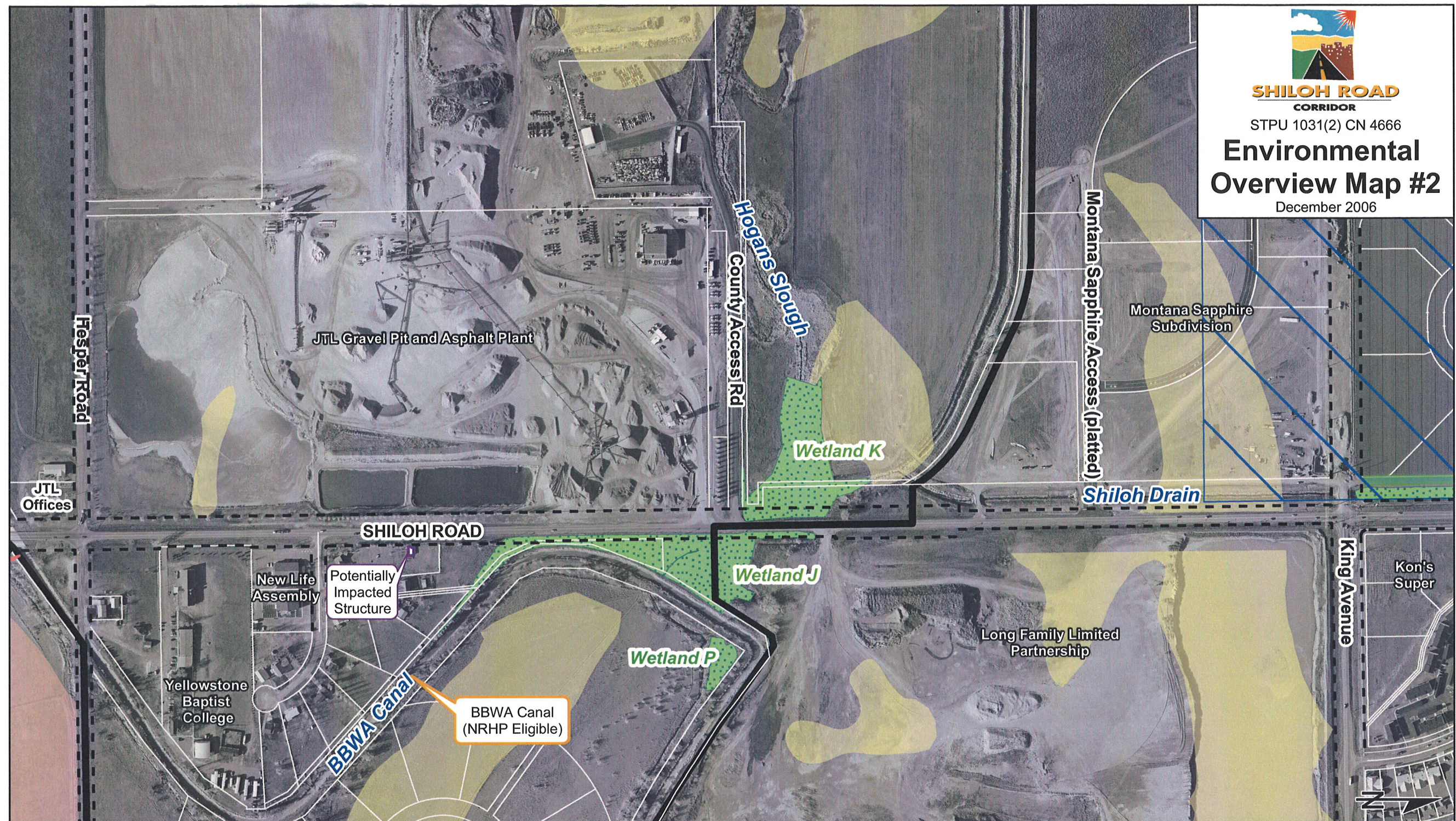
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Engineering, Inc., 2002 (aerial photography)  
Engineering, Inc., 2005 (existing right-of-way, potentially impacted structures)  
Ethnoscience, 2003 and 2005 (cultural resources)  
FEMA (floodplain data)  
NRCS Soil Survey Geographic Database (farmland data)  
Yellowstone County (parcel, Billings city limits and park data)

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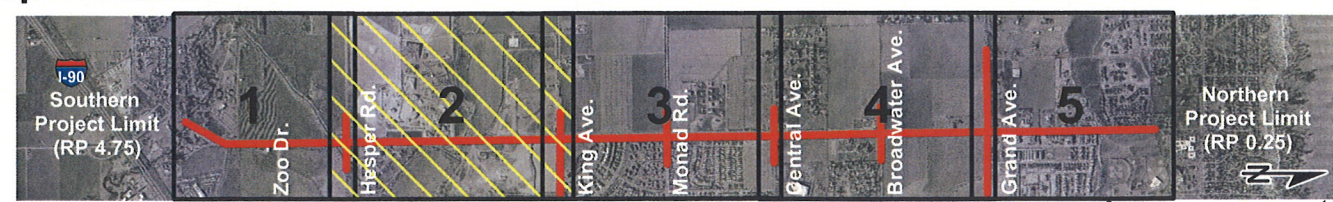
# Environmental Overview Map #2

December 2006

**Legend:**

--- Existing Right-of-Way	Parks and Recreation
--- Parcel Boundaries	Wetland
Billings City Limits	Farmlands of Statewide Importance
Potentially Impacted Structure	Prime Farmland (Irrigated)
Cultural Resource	Area of Undetermined, but Possible Flood Hazards

## Map Location:



Data Sources: DEA, Inc., 2005 wetland data  
 Engineering, Inc., 2002 (aerial photography)  
 Engineering, Inc., 2005 (existing right-of-way, potentially impacted structures)  
 Ethnoscience, 2003 and 2005 (cultural resources)  
 FEMA (floodplain data)  
 NRCS Soil Survey Geographic Database (farmland data)  
 Yellowstone County (parcel, Billings city limits and park data)


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





**SHILOH ROAD**  
CORRIDOR

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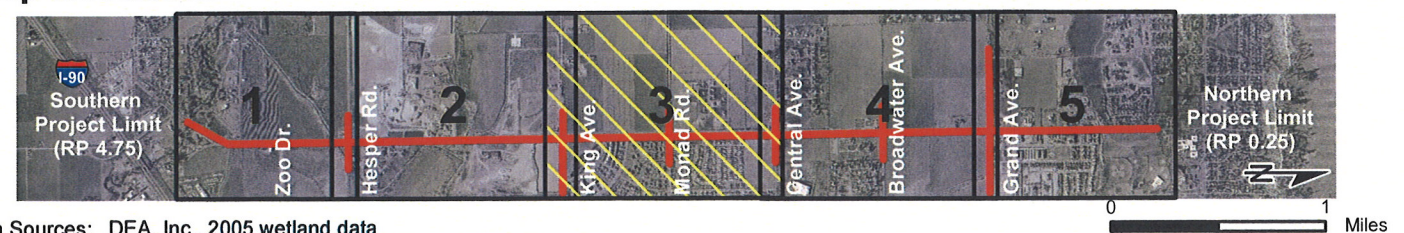
## Environmental Overview Map #3

December 2006

**Legend:**

--- Existing Right-of-Way	 Parks and Recreation
--- Parcel Boundaries	 Wetland
 Billings City Limits	 Farmlands of Statewide Importance
 Potentially Impacted Structure	 Prime Farmland (Irrigated)
 Cultural Resource	 Area of Undetermined, but Possible Flood Hazards

**Map Location:**



Data Sources: DEA, Inc., 2005 wetland data  
 Engineering, Inc., 2002 (aerial photography)  
 Engineering, Inc., 2005 (existing right-of-way, potentially impacted structures)  
 Ethnoscience, 2003 and 2005 (cultural resources)  
 FEMA (floodplain data)  
 NRCS Soil Survey Geographic Database (farmland data)  
 Yellowstone County (parcel, Billings city limits and park data)

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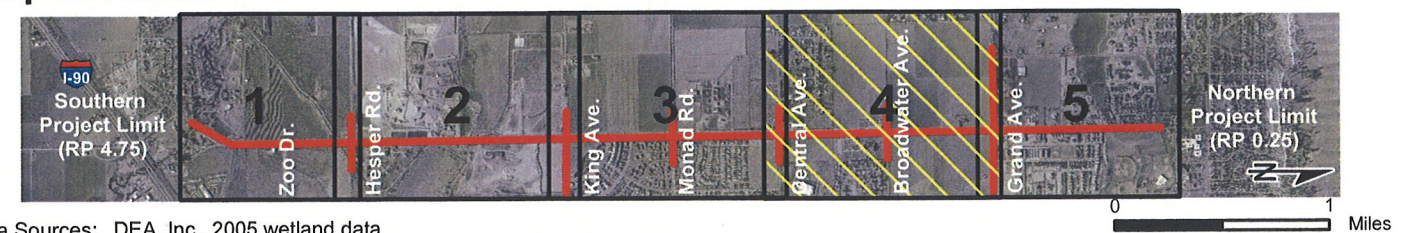




**Legend:**

--- Existing Right-of-Way	Parks and Recreation
--- Parcel Boundaries	Wetland
Billings City Limits	Farmlands of Statewide Importance
Potentially Impacted Structure	Prime Farmland (Irrigated)
Cultural Resource	Area of Undetermined, but Possible Flood Hazards

**Map Location:**



Data Sources: DEA, Inc., 2005 wetland data  
Engineering, Inc., 2002 (aerial photography)  
Engineering, Inc., 2005 (existing right-of-way, potentially impacted structures)  
Ethnoscience, 2003 and 2005 (cultural resources)  
FEMA (floodplain data)  
NRCS Soil Survey Geographic Database (farmland data)  
Yellowstone County (parcel, Billings city limits and park data)

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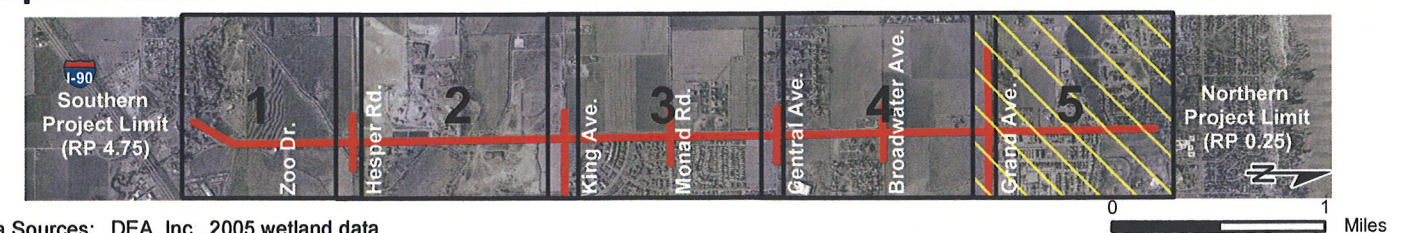


STPU 1031(2) CN 4666  
**Environmental  
 Overview Map #5**  
 December 2006

**Legend:**

--- Existing Right-of-Way	Parks and Recreation
--- Parcel Boundaries	Farmlands of Statewide Importance
Billings City Limits	Prime Farmland (Irrigated)
Potentially Impacted Structure	Area of Undetermined, but Possible Flood Hazards
Cultural Resource	

**Map Location:**



Data Sources: DEA, Inc., 2005 wetland data  
 Engineering, Inc., 2002 (aerial photography)  
 Engineering, Inc., 2005 (existing right-of-way, potentially impacted structures)  
 Ethnoscience, 2003 and 2005 (cultural resources)  
 FEMA (floodplain data)  
 NRCS Soil Survey Geographic Database (farmland data)  
 Yellowstone County (parcel, Billings city limits and park data)

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## **Appendix B      Agency Coordination**

**FOR SECTION 4(f) RELATED CORRESPONDENCE, PLEASE REFER TO:**

**APPENDIX D: Programmatic Section 4(f) Evaluations**

**FOR CORRESPONDENCE WITH THE MONTANA STATE HISTORIC PRESERVATION  
OFFICE, PLEASE REFER TO:**

**APPENDIX F: Cultural Resources**



# **COUNCIL SUMMARY CITY OF BILLINGS**

**CITY OF BILLINGS' MISSION STATEMENT:  
TO DELIVER COST EFFECTIVE PUBLIC SERVICES  
THAT ENHANCE OUR COMMUNITY'S QUALITY OF LIFE**

---

## **AGENDA**

**COUNCIL CHAMBERS**

**September 11, 2006**

**6:30 P.M.**

**CALL TO ORDER – Mayor Tussing**

**PLEDGE OF ALLEGIANCE – Mayor Tussing**

**INVOCATION – Councilmember Gaghen**

**ROLL CALL -- Councilmembers present on roll call were: Ronquillo, Gaghen, Stevens, Brewster, Veis, Ruegamer, Ulledalen, Boyer, Jones, and Clark.**

**MINUTES – August 28, 2006. Approved as printed.**

### **COURTESIES**

- Councilmember Stevens introduced her friend Sue Gustafson who is visiting from CA.
- Councilmember Boyer presented the Council with a plaque presented to the City by the Blue Blazers at the ribbon cutting ceremony for the opening of the newest portion of Zimmerman Trail.

### **PROCLAMATIONS**

- September 16: Boys & Girls Clubs Day for Kids in Billings
- September: National Library Card Sign-Up Month – Get Carded at Parmly Billings Library

### **ADMINISTRATOR REPORTS – Tina Volek**

- City Administrator Tina Volek noted that the Council's new microphones have been installed and are in service this evening.
- Ms. Volek noted that Items G and N have been withdrawn. She asked the Council to separate these items and recommended acceptance of the withdrawals.
- Ms. Volek also noted that exparte' communication had been received on Item 8 – the Shiloh Road intersection. Copies were placed in a binder available at the back of the Council Chambers this evening.
- She also noted that a revised report and Staff recommendation for Item 8 was placed on the Councilmembers' desks this evening.

**PUBLIC COMMENT on “NON-PUBLIC HEARING” Agenda Items: #1, #9 and #10 ONLY. Speaker sign-in required.** (Comments offered here are limited to 1 minute per speaker. Please sign up on the clipboard located at the podium. Comment on items listed as public hearing items will be heard **ONLY** during the designated public hearing time for each respective item.)

*(NOTE: For Items not on this agenda, public comment will be taken at the end of the agenda. Please sign up on the clipboard located at the back of the room.)*

- **JOE WHITE OF 926 N. 30<sup>TH</sup> ST.** spoke on Item 10 – the City Administrator contract. He said he objects to approval of the contract at this time, noting that the Council’s selection procedure was not followed. The procedure had been “short circuited” and stopped in progress, with no interviews conducted.

**CONSENT AGENDA: SEPARATIONS: C, G, J, AND N**

**1. A. Bid Awards:**

(1) **MET Transit Purchase** of one transit bus. Recommend Gillig Corporation, \$311,496.00.

(2) **W.O. 06-13: 2006 Accessibility Ramps.** (Opened 8/15/06; delayed from 8/28/06). Recommend J & J Concrete, \$332,227.50.

(3) **2007 4-Wheel Mechanical Broom High Dump Sweeper.** (Opened 9/5/06). Recommend delaying award to 9/25/06.

**B. C.O. #8, W.O. 04-13: Filter Building Expansion and Improvements,** COP Construction, \$48,312.49.

**C. Amendments to Agreements with Wells-Fargo:**

(1) Buy-Sell Agreement

(2) Drive-up Bank lease.

**DELAYED TWO WEEKS TO 9/25/06**

**D. Renewal of Generator Room Lease** with FAA in lower level of the Terminal Building, \$72.92/month.

**E. Applications relating to W.O. 04-36: Briarwood Sanitary Sewer Main Extensions:**

(1) Structure Encroachment Permit from MDT

(2) Encroachment and Utility Occupancy Permit from MDT

(3) Right-of-Way Permit from DNRC for utilities across State Lands

**F. Declaring property as surplus property** and authorizing a public auction of surplus City equipment and police recovered property on September 30, 2006.

**G. Sale of 1999 Elgin street sweeper** to Yellowstone County, \$15,000.00.  
**TABLED**



**H. Application for Paratransit Operating Assistance Grant** from MDOT and subsequent acceptance of the agreement if received, up to \$710,496.00.

**I. Acknowledging receipt of petition Annex #06-13** to annex a 65-acre parcel generally located south of Rimrock Rd. between 50<sup>th</sup> and 54<sup>th</sup> Streets West and described as Tracts 1 & 2, C/S 2054 and Cynthia Park (a county park), Blue Diamond Ranch Partnership LLC, owner/petitioner, and setting a public hearing date for 9/25/06.

**J. Second/final reading ordinance 06-5385** providing that the BMCC be amended by revising Sections 24-1007 through 1009 and Section 24-1011; providing for vehicle immobilization when outstanding parking fines exceed \$50.00; updating the procedure; and increasing certain fines. **APPROVED WITH ONE AMENDMENT: AMENDING THE BOOT FEE ON PAGE 4 TO \$100.**

**K. Second/final reading ordinance 06-5386** expanding the boundaries of Ward IV to include recently annexed property in Annex #06-11: a 36-acre parcel generally located on the west side of 46<sup>th</sup> St. W, south of Rimrock Rd. and described as: Tract 1, C/S 3273, Jim Boyer and Paul Bromenshenk, petitioners.

**L. Second/final reading ordinance 06-5387** for Zone Change #787: An ordinance providing that the BMCC be amended by revising Section 27-1404 through 1406 and Section 27-1431 through 1433, adopting the revisions as an amendment to the Zoning Regulations (re: the Shiloh Corridor Overlay District) and setting a time period for the regulation to be effective.

**M. Second/final reading ordinance 06-5388** for Zone Change #789: A zone change from Residential-9,600 to Neighborhood Commercial on Lots 8 & 9, Block 2 of Central Acres Subdivision, 2<sup>nd</sup> filing, located at 3525 Central Avenue, Betty Larsen, owner.

**N. Preliminary Subsequent Minor Plat** of Amended Lot 11-A of Amended Lots 11, 12, and 13, Block 1, Sand Cliff Subdivision, generally located south of State Highway 3 between Aireway Drive (south) and Masterson Circle (north), approximately ½ mile southwest of the airport, conditional approval of the preliminary subsequent minor plat and adoption of the findings of fact. **TABLED**

**O. Bills and payroll.**

- (1) August 4, 2006
- (2) August 11, 2006
- (3) August 18, 2006

**(Action: approval or disapproval of Consent Agenda.) APPROVED**

## **REGULAR AGENDA:**

2. **PUBLIC HEARING AND FIRST READING ORDINANCE** expanding the boundaries of Ward V to include recently annexed property in Annex #06-12: a 14.5-acre parcel described as Tract 1 of Corrected Amendment of Tracts 1 and 3 and Remainder Tract 2 to be the Amendment of Tracts 1, 2, and 3, C/S 1648, Bell Family Trust, owner. Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED; SECOND/FINAL READING ON 9/25/06**

3. **PUBLIC HEARING AND RESOLUTIONS Creating Special Improvement Lighting Maintenance Districts:**

- A. **06-18476** SILMD 290 – S. 32<sup>nd</sup> St. West;
- B. **06-18477** SILMD 299 – Vintage Estates Subdivision;
- C. **06-18478** SILMD 300 – Bellville Subdivision.

Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED**

4. **PUBLIC HEARING AND RESOLUTIONS relevying and respreading assessments:**

- A. **06-18479** SID 1365: installation of water, sanitary sewer, storm drain, and street improvements, in Lake Hills Subdivision, 25<sup>th</sup> Filing.
- B. **06-18480** SID 1366: construction of a park, city water supply, concrete parking lot, and storm drain in Rimrock West Estates Subdivision, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> filings and C/S 1350.

Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED**

5. **PUBLIC HEARING AND RESOLUTIONS levying and assessing original assessments:**

- A. **06-18481** SID 1368: construction of street, curb, gutter, sanitary sewer, water improvements and storm drainage improvements to Annandale Road from Greenbrier Road to Cherry Hills Road.
- B. **06-18482** SID 1370: installation of missing sidewalks, drive approaches, accessibility ramps, curb and gutter and street widening improvements and miscellaneous storm drainage improvements on Interlachen Drive between River Oaks Drive and the southern extension Skyview Drive and on Lakewood Drive from Interlachen Drive to its eastern end.
- C. **06-18483** SID 1373: construction of curb, gutter and street improvements (including bike path) for South Billings Boulevard between King Avenue and Underpass Avenue.

- D. **06-18484** SID 2501: miscellaneous sidewalk, curbs, and gutter improvements located in areas throughout the City.  
Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED**
6. **PUBLIC HEARING AND RESOLUTION 06-18485** levying and assessing original assessments for SID 3006: Tree Removal Costs. Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED**
7. **PUBLIC HEARING AND RESOLUTION 06-18486** setting mill levy rates for (a) the Public Safety Fund, (b) General Obligation Debt Service - Parks, and (c) General Obligation Debt Service - Streets for FY2007. Staff recommends approval. **(Action: approval or disapproval of Staff recommendation.) APPROVED**
8. **PUBLIC HEARING** regarding the City Council preferences on intersection and maintenance alternatives in the Shiloh Road Corridor area. ~~Recommendation to be made at meeting.~~ Project Advisory Committee (PAC) recommends the roundabout alternative at arterial locations (7 or 8) as the preferred alternative. Staff recommends approval of PAC's recommended preferred alternative for Shiloh Road reconstruction. **(Action: approval or disapproval of Staff recommendation.) APPROVED**
9. **2007 UNIFIED PLANNING WORK PROGRAM (UPWP)** for the Billings Metropolitan Planning Organization. Staff recommends approval of the Draft 2007 UPWP and authorizing the Mayor to take this recommendation to the Policy Coordinating Committee (PCC) meeting. **(Action: approval or disapproval of Staff recommendation) APPROVED**
10. **CITY ADMINISTRATOR CONTRACT** with Tina Volek. **(Action: approval or disapproval of contract.) DELAYED TO 9/25/06**
11. **PUBLIC COMMENT on Non-Agenda Items -- Speaker sign-in required.**  
*(Restricted to ONLY items not on this printed agenda; comments limited to 3 minutes per speaker. Please sign up on the clipboard located at the back of the Council Chambers.)*
  - **JOE WHITE OF 926 N. 30<sup>TH</sup> ST.** commented briefly on recent comments made by Bill Frist on CSPAN. Mr. White also spoke on the need to clean up the South Side.

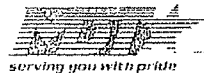
### **COUNCIL INITIATIVES**

- **STEVENS: MOVED** that any future trail census be conducted "stealthfully" (i.e. without advance notice to the public). **APPROVED**

**ADJOURN** – 8:45 p.m.

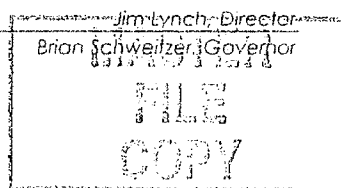
*(NOTE: Additional information on any of these items is available in the City Clerk's Office)*

Visit our Web site at:  
<http://ci.billings.mt.us>



3077  
Montana Department of Transportation

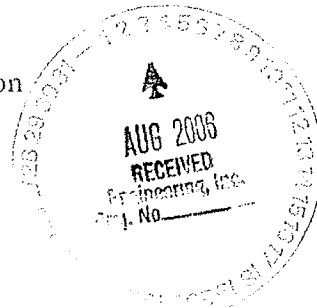
2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001



July 27, 2006

Tina Volek  
Acting City Administrator  
City of Billings  
PO Box 1178  
Billings MT 59103

John Ostlund  
Chairman  
Yellowstone Co Commission  
217 N 27<sup>th</sup>  
Billings MT 59101



Subject: Shiloh Road Maintenance

Dear Tina and John,

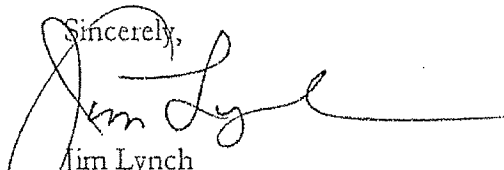
Thank you for your letter of June 23 where you asked the Montana Transportation Commission to have the Montana Department of Transportation (MDT) assume maintenance responsibility for Shiloh Road once the road has been reconstructed

In order for MDT to have maintenance responsibility for a road, it had to have maintenance responsibility for the road prior to July 1, 1976. The road has to be on the state maintenance system, or there must be an exchange of maintenance with local government by formal agreement.

One or more of the above conditions apply to that portion of Shiloh Road south of Zoo Drive and is presently maintained by the department; however, none of the conditions apply to that portion of Shiloh Road between Zoo Drive and Rimrock Road.

MDT would consider exchanging comparable lane mileage with an existing urban route. This proposal would not take the exchanged route or route segment off the federal urban system.

Please let me know if you are interested in pursuing an exchange. MDT will develop a list of potential routes that could be considered for exchange. Finding a long-term solution for the maintenance of the proposed project is important to completing the environmental document and is critical to letting the project to contract.

Sincerely,  
  
Jim Lynch  
Director

copies: Bruce Barrett, Billings District Administrator

## Kirk Spalding

---

**From:** Heisler, Vern [HeislerV@ci.billings.mt.us]  
**Sent:** Monday, November 28, 2005 11:47 AM  
**To:** Kirk Spalding  
**Cc:** Mumford, David  
**Subject:** Your Memo dated 11/10/2005

Kirk:

I have read the memorandum that you sent to Dave with the reference "Hydraulics Memorandum". I believe the information contained within that memo is consistent with the discussions held between the City Of Billings Public Works Dept (Dave and Vern), MDT and Engineering Inc. Namely that historical records and personal accounts of the Hogan Slough do not support the results from the hydraulic model that indicates overtopping of Shiloh Road at the 2-year storm and beyond. Your memo also includes a discussion that the existing structure for Shiloh Road for the Hogan Slough will be replaced with a similar hydraulic structure with the new road construction. Again, I believe this is consistent with past discussions with city public works. If you need any additional information on this subject, please contact me. Note that I will be out of the office beginning Nov. 30<sup>th</sup> and will return on Dec 12<sup>th</sup>. Thanks.

Vern

11/28/2005

B-8



**CITY OF BILLINGS**  
**OFFICE OF CITY ADMINISTRATOR**

P.O. BOX 1178  
BILLINGS, MONTANA 59103  
(406) 657-8433  
FAX (406) 657-8390



June 23, 2006

Bill Kennedy, Chairman  
Montanan Transportation Commission  
Yellowstone County Courthouse  
217 N. 27<sup>th</sup>  
Billings Montana 59101

Subject: Shiloh Road Maintenance

Dear Chairman Kennedy:

The City of Billings, Yellowstone County and Montana Department of Transportation (MDT) have been working for several months to resolve the future maintenance responsibilities for the reconstructed Shiloh Road. The difficulty in resolving future maintenance for the roadway facility is that the State of Montana owns the existing right-of-way between Grand Avenue and Zoo Drive, and the road currently is located in both the City of Billings and Yellowstone County. Yellowstone County and the City of Billings have legal issues with expending local funding to maintain a roadway owned by the State of Montana and for the City of Billings outside our jurisdiction. The three organizations are looking at all options to resolve the long term maintenance of Shiloh Road. MDT has stated they are not currently funded in their maintenance budget to assume the long term maintenance of Shiloh Road. The City of Billings and Yellowstone County are requesting your assistance in requesting the State of Montana increase the MDT Regional maintenance allocation to allow them to maintain the roadway or provide the funding to the City of Billings for maintenance. We very much recognize the State's funding limitations, but neither Yellowstone County nor the City of Billings has additional resources. I am confident the maintenance question will be resolved before the project design is complete. Your assistance in bringing this issue to the Montana Department of Transportation is very much appreciated.

Sincerely,

Tina Volek, Acting City Administrator  
City of Billings

John Ostlund, Chairman  
Yellowstone County Commissioners

CC; John Lynch, Director, MDT

*P. D.*





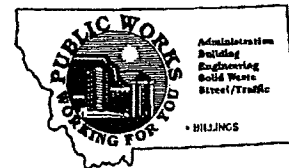
# CITY OF BILLINGS

**PUBLIC WORKS DEPARTMENT**  
**Engineering Division**

510 North Broadway\*4th Floor  
Billings, Montana 59101  
Office (406) 657-8231  
Fax (406) 657-8252

January 27, 2003

Michael Sanderson, PE, PTOE  
The Transportation Group  
Suite 200 Creekside  
1001 S. 24<sup>th</sup> St. West  
P.O. Box 81345  
Billings, MT 59108-1345



RE: Shiloh Road Corridor Environmental Assessment

Dear Mr. Sanderson:

I am in receipt of your letter dated January 16, 2003 sent to Mayor Tooley concerning the project referenced above. The City of Billings would like to be a cooperating agency on this project in accordance with the U.S. Department of Transportation Federal Highway Administration's regulations (23 CFR 771.111(d)).

I will serve as the City of Billings' point person for this project. As such, please direct all future correspondence/information regarding this project to my office.  
Thank you.

Signed,

Vern Heisler, P.E.  
City Engineer

cc: Mayor Charles Tooley  
Dennis Taylor, City Administrator  
David Mumford, Public Works Director



# *Yellowstone County*

PUBLIC WORKS DEPARTMENT  
P.O. Box 35024  
Billings, MT 59107-5024

Phone (406) 256-2735  
Fax (406) 254-7946



November 21, 2005

Kirk Spalding, P.E.  
Project Manager  
Engineering Inc.  
1300 N Transtech Way  
Billings, MT 59102

RE: Shiloh Road Corridor  
STPU 1031 (2) Control No. 4666  
E.I. No. 01103

Dear Kirk,

We are in receipt of your request for a written response dated 11-10-05. As you are aware we provided an e-mail to you through our Public Works Department dated 7-8-05.

Both Bob Moats & Mike Black of our Public Works staff attended the 4-14-05 meeting where the decision to proceed with the EA was discussed. As you may recall FHWA personnel were also in attendance. For additional background see the 11-10-05 letter from Kirk Spalding to Fred Bente.

Yellowstone County will accept the level of service provided by the proposed design approach for the Hogans Slough Crossing under Shiloh Road.

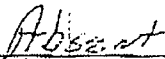
Yellowstone County is currently responsible for the maintenance of Shiloh Road at the Hogans Slough crossing and does not have any records indicating flood repair maintenance being required on Shiloh Road since the 1937 flood event. Yellowstone County's current maintenance responsibility for Shiloh Road is for the existing configuration, which is a two lane road with limited signage and signalization.

Yellowstone County has participated in the project development (and are members of the Project Advisory Committee) and has participated in developing this project approach and this proposed design approach to the Hogans Slough crossing.

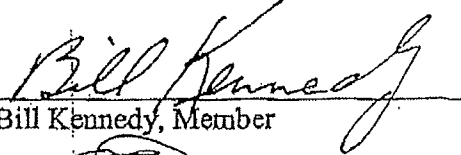
Further, the purpose of this letter is to concur with the information presented in the letter from Kirk Spalding, P.E. (Project Manager with Engineering Inc.) to Fred Bente (Consultant Design Section of MDT) dated 11-10-05.

Thank you for your continued cooperation and coordination of this most worth while project of substantial value to both Yellowstone County and the City of Billings. Should you have any additional questions or need further information please contact us or our Public Works Department.

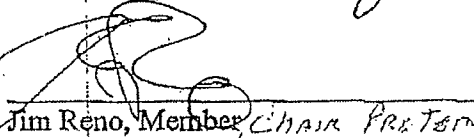
Sincerely Board of Yellowstone County Commissioners,



John Ostlund, Chairman



Bill Kennedy, Member



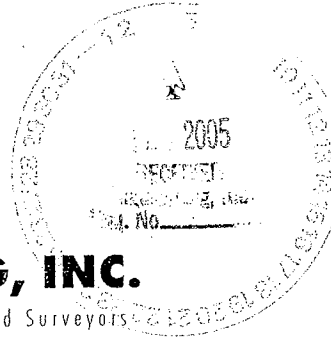
Jim Reno, Member *Chair Pro Tem*

c: Bruce Barrett, MDT District 5 Administrator  
Fred Bente, Consultant Project Supervisor, MDT  
Mark Goodman, Hydraulic, MDT  
Jean Riley, Environmental Bureau Chief, MDT  
Alan Woodmansey, FHWA, Billings,  
John Ostlund, County Commissioner, Yellowstone County  
Dave Mumford, Public Works Directory, City of Billings



## ENGINEERING, INC.

Consulting Engineers and Land Surveyors

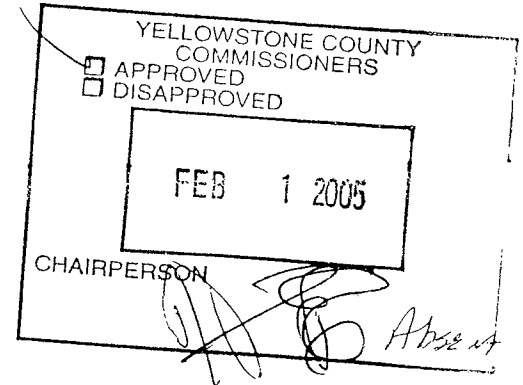


JAN 20 2005

*Handwritten signature*

January 19, 2005

Mr. Bill Kennedy, Chairman  
County Commissioners  
Yellowstone County  
P.O. Box 35000  
Billings, MT 59107-5000



Reference: STPU 1031 (2) CN 4666  
Shiloh Road Corridor Project  
E.I. No. 01103

Dear Mr. Kennedy:

This letter is to inform Yellowstone County of the extension to the proposed project limits of the above-referenced project. The previous project limits extended from the Canyon Creek Bridge to Grand Avenue. In cooperation with the City of Billings, the Montana Department of Transportation (MDT) proposed to extend the project limits to the north approximately  $\frac{3}{4}$  of a mile, from Grand Avenue to Poly Drive. The Montana Transportation Commission approved the extension during its August 11, 2004, meeting. This area will be referred to as the northern project extension.

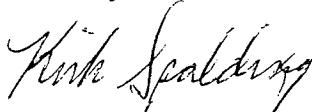
Yellowstone County has agreed to be a Cooperating Agency on the project in accordance with the U.S. Department of Transportation Federal Highway Administration's (FHWA's) regulations (23 CFR 771.111(d)).

Please review the updated study area map, as well as your original response dated June 10, 2003, which are attached to this letter. As the correspondence occurred over 18 months ago, we would like to verify that we have the most current information available. Please provide any updated or additional information needed to complete this project.

Mr. Bill Kennedy  
January 19, 2005  
Page 2

Contact me at 406/656-5255 if you have any questions about this request. A response to this request would be appreciated within 45 calendar days. If no response is received by March 6, 2005, it will be assumed that no additional information or issues have been identified as a result of the northern project extension. Thank you for your assistance.

Sincerely,



Kirk Spalding, PE  
Project Manager

/dml  
encls

c: Bruce H. Barrett, MDT Billings District (No. 5) Administrator  
Fred Bente, Consultant Design Project Manager  
Thomas S. Martin, P.E., MDT Consultant Design Engineer  
John H. Horton, Jr., MDT Right-of-Way Bureau Chief  
Jean A. Riley, P.E., MDT Environmental Services Bureau Chief  
Carl D. James, FHWA Montana Division Field Operations Engineer  
Gary Good, Yellowstone County Public Works  
Bob Moats, Yellowstone County Public Works – Road & Bridge Division  
Laura Meyer, David Evans and Associates, Inc.

P:01103\_Kennedy\_LTR\_011905

# Yellowstone County



**COMMISSIONERS**  
(406) 256-2701  
(406) 256-2777 (FAX)

P.O. Box 35000  
Billings, MT 59107-5000  
commission@co.yellowstone.mt.us

June 10, 2003

Mr. Michael Sanderson, PE, PTOE  
Engineering, Inc.  
PO Box 81345  
Billings, MT 59108-1345

Re: Shiloh Road Corridor Environmental Assessment Cooperating Agency  
Request

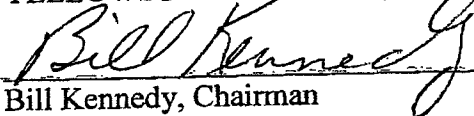
Dear Mr. Sanderson,

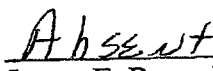
Thank you for your letter requesting Yellowstone County to be a Cooperating Agency for the environmental documentation on this project. We are vitally interested in this important transportation project, and wish to be included as a Cooperating Agency throughout the course of your firm's work.

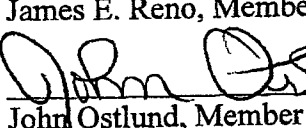
We plan to stay involved and participate throughout the development and execution of this project. Please keep the Public Works Department apprised of your progress as well.

Sincerely,

BOARD OF COUNTY COMMISSIONERS  
YELLOWSTONE COUNTY, MONTANA

  
Bill Kennedy, Chairman

  
James E. Reno, Member

  
John Ostlund, Member

BOCC/pt

C: Public Works Department  
File



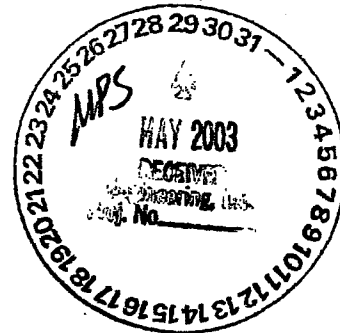
**U.S. ARMY CORPS OF ENGINEERS**  
HELENA REGULATORY OFFICE  
10 WEST 15TH STREET, SUITE 2200  
HELENA, MONTANA 59626



REPLY TO  
ATTENTION OF:

Helena Regulatory Office  
Phone (406) 441-1375  
Fax (406) 441-1380

May 27, 2003



Subject: Corps File Number 2003-90-135  
Shiloh Road Corridor  
STPU 1031(2), MDT Control Number 4666

Mr. Michael P. Sanderson, P.E., P.T.O.E.

• Project Manager  
Engineering, Inc.  
1001 South 24<sup>th</sup> Street West  
PO Box 81345  
Billings, Montana 59108-1345

Dear Mr. Sanderson:

This letter is a response to your March 6, 2003 request that the US Army Corps of Engineers (Corps) be a Cooperating Agency for the Montana Department of Transportation (MDT) project listed above. The project corridor is along Shiloh Road near the west edge of Billings, and follows Shiloh Road from Grand Avenue to the Canyon Creek Bridge. We recognize that a reply was requested by April 18, 2003, and we appreciate your acceptance of this late response.

Under the authority of Section 404 of the Clean Water Act, Department of the Army permits are required for the discharge of fill material below the ordinary high water mark of our Nation's rivers, streams, lakes or wetlands.

Pursuant to the National Environmental Policy Act, the Corps agrees to be a Cooperating Agency. Our participation as a Cooperating Agency will be limited to reviewing and commenting on project features that may affect Waters of the United States. This will be in addition to our regulatory and permitting responsibilities.

You also requested a determination regarding the presence of Waters of the United States (WUS) within the identified project limits. This office has made a preliminary determination that Canyon Creek and Hogan's Slough and all wetlands adjacent to those two streams appear to be WUS. No other waters subject to Department of Army regulatory authorities appear to be present within the corridor.

Todd Tillinger of this office will be the Corps' project manager. He may be reached by phone at (406) 441-1375 or by e-mail at [todd.n.tillinger@usace.army.mil](mailto:todd.n.tillinger@usace.army.mil). Please reference Corps File Number 2003-90-135.

Sincerely,

Allan Steinle  
Montana Program Manager

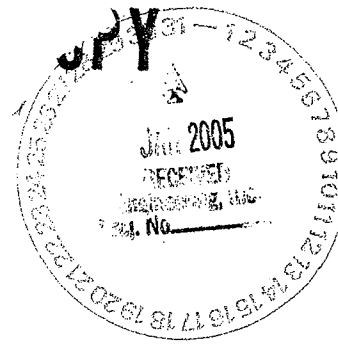
Copy Furnished:

Jean Riley, Montana Department of Transportation Environmental Services, Helena



United States Department of the Interior

FISH AND WILDLIFE SERVICE  
ECOLOGICAL SERVICES  
MONTANA FIELD OFFICE  
100 N. PARK, SUITE 320  
HELENA, MONTANA 59601  
PHONE (406) 449-5225, FAX (406) 449-5339



M.17 FHWA (I)

January 26, 2005

Kirk Spalding  
Engineering, Inc.  
1300 North Transtech Way  
Billings, Montana 59102

Dear Mr. Spalding:

This is in response to your letter dated January 19, 2005, regarding the Shiloh Road Corridor Project in Yellowstone County, Montana (STPU 1031(2); CN 4666). This proposed project previously extended from the Canyon Creek bridge to Grand Avenue on the western edge of Billings. Your letter indicated that this project has now been extended to the north approximately 3/4 of a mile, from Grand Avenue to Poly Drive. As you mentioned in your letter, the U.S. Fish and Wildlife Service (Service) previously provided a list of federally-listed species for this project in a letter to your company dated February 18, 2003. Because of the change in project limits and the length of time that has elapsed since that list was issued, you are requesting a new list from the Service that includes the northern project extension.

Within areas encompassing the proposed project, there have been a few recent changes to species proposed for listing and species that are candidates for listing. The proposal to list mountain plovers (*Charadrius montanus*) as threatened was withdrawn by the Service on September 9, 2003. Black-tailed prairie dogs (*Cynomys ludovicianus*) were removed from the list of candidate species on August 12, 2004. Therefore, the only threatened or endangered species that may occur in the vicinity of this proposed project that you should consider in a biological assessment is the threatened bald eagle (*Haliaeetus leucocephalus*).

If you have questions regarding this letter, please contact Scott Jackson, of my staff, at (406) 449-5225, extension 201.

Sincerely,

R. Mark Wilson  
Field Supervisor

Copy to: FWS-ES, Billings Suboffice

logged  
B-17



**Laura Hunter - Re: Shiloh Road**

---

**From:** <Scott\_Jackson@fws.gov>  
**To:** "Sue Platte" <Sec@deainc.com>  
**Date:** 5/12/2004 9:22 AM  
**Subject:** Re: Shiloh Road

---

Hi Sue,

In reference to your request, I am providing you with an updated list of threatened and endangered species that may occur in the vicinity of the Shiloh Road corridor on the western edge of Billings in Yellowstone County, Montana. As your message mentioned, we previously issued a species list for this project on February 18, 2003. That letter included the mountain plover as a species proposed for listing. As you may know, on September 9, 2003, the Fish and Wildlife Service withdrew our proposal to list the mountain plover as threatened. Therefore, the most recent list of threatened, endangered, proposed, and candidate species that may occur in the vicinity of this project would include the threatened bald eagle and candidate black-tailed prairie dog.

Please let me know if you have questions or if I can be of further assistance.

Scott Jackson, Wildlife Biologist  
 U.S. Fish and Wildlife Service  
 100 North Park Avenue, Suite 320  
 Helena, Montana 59601  
 (406)449-5225, ext. 201  
 scott\_jackson@fws.gov

"Sue Platte"  
 <Sec@deainc.com> To: <scott\_jackson@fws.gov>  
 cc: "Laura Hunter" <Llhu@deainc.com>, "Sue Platte"  
 05/06/04 10:44 <Sec@deainc.com>  
 AM Subject: Shiloh Road

Hi Scott:

I am requesting an updated species list for the Shiloh Road Corridor Environmental Analysis. The study area is located in Yellowstone County, in west Billings between Grand Avenue (R.P. 0.996) and Canyon Creek Bridge (R.P. 4.75). The project involves reconstruction of 3.78 miles (6.08 km) of Shiloh Road. This is a north-south arterial providing access from West Billings to the Shiloh Road Interchange on I-90. The legal description is T1 South, R 25 East, Sections 2, 3, 10, 11, 14, 15, 22, and 23; and T 1 North, R 25 East, Sections 33 and 34.

Our current species list is dated February 18, 2003 and includes bald eagle (spring or fall migrant), mountain plover (occurrence in shortgrass prairie), and black-tailed prairie dog (occurrence in shortgrass prairie). Please email any changes or send response to attention:

Sue Platte  
419 S. Florence  
Sandpoint, ID 83863

Thank you for your cooperation,



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES

MONTANA FIELD OFFICE

100 N. PARK, SUITE 320

HELENA, MONTANA 59601

PHONE (406) 449-5225, FAX (406) 449-5339

M.17 FHWA (I)

February 18, 2003

Michael P. Sanderson  
Engineering, Inc.  
Suite 200 Creekside  
1001 South 24<sup>th</sup> Street West  
P.O. Box 81345  
Billings, Montana 59108-1345



Dear Mr. Sanderson:

This responds to your letter dated January 16, 2003, regarding the Montana Department of Transportation's Shiloh Road Corridor Environmental Assessment (STPU 1031(2); Control No. 4666) in Yellowstone County, Montana. In general, the project involves the reconstruction of 6.1 kilometers of Shiloh Road on the western edge of Billings. Your letter requested a list of threatened, endangered, proposed, and candidate species that may occur in the vicinity of this proposed project corridor. These comments were prepared under the authority of, and in accordance with, the provisions of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*). The U.S. Fish and Wildlife Service's (Service) Montana Field Office received your letter on January 22, 2003.

In accordance with Section 7(c) of the Act, the Service has determined that the following threatened, endangered, proposed, and candidate species may be present in the project corridor:

### Listed Species

bald eagle (*Haliaeetus leucocephalus*); threatened

### Expected Occurrence

spring or fall migrant

### Proposed Species

mountain plover (*Charadrius montanus*); proposed as threatened

potential occurrence in shortgrass prairie habitat

### Candidate Species

black-tailed prairie dog (*Cynomys ludovicianus*)

possible occurrence in shortgrass prairie

Section 7(c) of the Act requires that Federal agencies proposing major construction activities complete a biological assessment to determine the effects of the proposed actions on listed and proposed species and use the biological assessment to determine whether formal consultation is required. A major construction activity is defined as "a construction project (or other undertaking having similar physical impacts) which is a major Federal action significantly affecting the quality of the human environment as referred to in the National Environmental Policy Act (NEPA)" (50 CFR Part 402). If a biological assessment is not required (i.e., all other actions), the Federal agency is still required to review their

proposed activities to determine whether listed species may be affected. If such a determination is made, consultation with the Service is required.

For those actions wherein a biological assessment is required, the assessment should be completed within 180 days of initiation. This time frame can be extended by mutual agreement between the Federal agency or its designated non-Federal representative and the Service. If an assessment is not initiated within 90 days, this list of threatened and endangered (T/E) species should be verified with the Service prior to initiation of the assessment. The biological assessment may be undertaken as part of the Federal agency's compliance of section 102 of NEPA and incorporated into the NEPA documents. We recommend that biological assessments include the following:

1. A description of the project.
2. A description of the specific area that may be affected by the action.
3. The current status, habitat use, and behavior of T/E species in the project area.
4. Discussion of the methods used to determine the information in Item 3.
5. An analysis of the affects of the action on listed species and proposed species and their habitats, including an analysis of any cumulative effects.
6. Coordination/mitigation measures that will reduce/eliminate adverse impacts to T/E species.
7. The expected status of T/E species in the future (short and long term) during and after project completion.
8. A determination of "is likely to adversely affect" or "is not likely to adversely affect" for listed species.
9. A determination of "is likely to jeopardize" or "is not likely to jeopardize" for proposed species.
10. Citation of literature and personal contacts used in developing the assessment.

If it is determined that a proposed program or project "is likely to adversely affect" any listed species, formal consultation should be initiated with this office. If it is concluded that the project "is not likely to adversely affect" listed species, the Service should be asked to review the assessment and concur with the determination of no adverse effect.

Pursuant to section 7(a) (4) of the Act, if it is determined that any proposed species may be jeopardized, the Federal agency should initiate a conference with the Service to discuss conservation measures for those species. For more information regarding species of concern occurring in the project area, including proposed and candidate species, please contact the Montana Natural Heritage Program, 1515 East 6th Ave., Helena, 59601, (406)444-3009.

A Federal agency may designate a non-Federal representative to conduct informal consultation or prepare biological assessments. However, the ultimate responsibility for Section 7 compliance remains with the Federal agency and written notice should be provided to the Service upon such a designation. We recommend that Federal agencies provide their non-Federal representatives with proper guidance and oversight during preparation of biological assessments and evaluation of potential impacts to listed species.

Section 7(d) of the Act requires that the Federal agency and permit/applicant shall not make any irreversible or irretrievable commitment of resources which would preclude the formulation of reasonable and prudent alternatives until consultation on listed species is completed.

Power lines in the vicinity, if not properly constructed, could pose electrocution hazards for bald eagles. To conserve eagles and other large raptors protected by Federal law, we urge that any power lines that need to be modified or reconstructed as a result of this project be raptor-proofed utilizing criteria and

techniques similar to those outlined in the publication, "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996." A copy may be obtained from: Jim Fitzpatrick, Treasurer, Carpenter Nature Center, 12805 St. Croix Trail South, Hastings, MN 55033. The use of such techniques would likely be most beneficial adjacent to expected raptor foraging areas (i.e., stream crossings, wetlands that support populations of waterfowl, or upland areas that support high populations of raptor prey species).

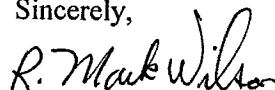
Your letter indicates that the project corridor crosses several significant waterways, as well as a number of irrigation canals. Relative to those crossings, in addition to wetlands that might be impacted by the proposed project, Corps of Engineers (Corps) Section 404 permits may eventually be required. In that event, depending on permit type and other factors, the Service may be required to review permit applications and will recommend any protection or mitigation measures to the Corps as may appear reasonable and prudent based on the information available at that time.

Your letter requested that the Service be a Cooperating Agency with regards to this project. The Service agrees to be a Cooperating Agency, and as such the Service will review and respond to documents required for compliance with the Endangered Species Act and the Fish and Wildlife Coordination Act.

In response to a point raised in your letter regarding resources that may be protected by section 4(f) of the 1966 Department of Transportation Act (49 U.S.C. 303), based on the information we have in this office there are no lands administered by the Service in the immediate vicinity of the proposed project corridor that would qualify as section 4(f) resources.

If you have questions regarding this letter, or about our joint consultation responsibilities, please contact Mr. Scott Jackson, of my staff, at (406)449-5225, extension 201.

Sincerely,



R. Mark Wilson  
Field Supervisor

Copy to: FWS-ES, Billings Suboffice



# Montana Fish, Wildlife & Parks



2300 Lake Elmo Drive  
Billings MT 59105  
Ref: hn011-05  
March 2, 2005

Mr. Kirk Spalding, P.E.  
Project Manager  
Engineering, Inc.  
1300 Transtech Way  
Billings, MT 59102

Dear Kirk:

Fish, Wildlife & Parks has reviewed the proposed extension of the project from Grand Avenue to Poly Avenue and has no additional comments to make.

Thanks for the opportunity to comment on this extension.

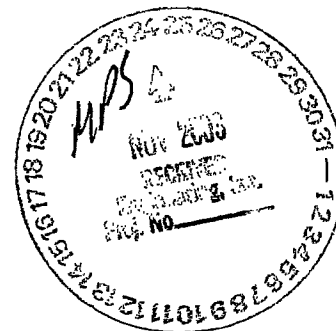
Sincerely,

Harvey E. Nyberg  
Regional Supervisor



# Montana Fish Wildlife & Parks

1420 East Sixth Avenue  
P O Box 200701  
Helena MT 59620-0701  
November 20, 2003



Michael Sanderson, PE  
Engineering Inc  
P O Box 81345  
Billings, MT. 59108-1345

Subject: Shiloh Road Corridor EA  
STPU 1031 (2) CN

Dear Mr. Sanderson:

In response to your letter regarding the above project, Montana Fish, Wildlife & Parks does not own any property nor does it anticipate acquiring any property in the direct vicinity of the proposed project. A copy of your inquiry will be forwarded to the FWP Regional Office in Billings also in case they wish to offer comments in addition to their letter of April 14, 2003.

FWP is also responsible for oversight of the state side of the Land and Water Conservation Fund (LWCF). There are many local municipalities with LWCF-assisted outdoor recreation sites. If proposed construction or land acquisition activities would affect such locally owned recreation or park facilities, please contact Walt Timmerman of the Helena FWP office with site names. Walt will be able to check LWCF database files and provide the LWCF status of each named site. Thank for the opportunity to comment.

Sincerely,

*Debby Dils*  
Debby Dils  
Land Section Supervisor

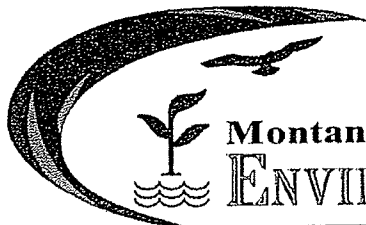
Cc: R5, Walt Timmerman



April 14, 2003

B-25





**Montana Department of  
ENVIRONMENTAL QUALITY**

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.state.mt.us

Kirk Spalding  
Engineering, Inc  
1300 North Transtech Way  
Billings MT 59102

RE: Shiloh Road Corridor Project Yellowstone Sweetgrass  
Project name TMDL Planning Area

Thank you for contacting the Department of Environmental Quality, Water Quality Planning Bureau about your modified project. We greatly value this opportunity to coordinate our programs to restore and protect Montana's water resources. We encourage you to evaluate your project against the following criteria found in Montana law and regulations.

The State of Montana has Water Quality Standards to protect the beneficial uses of our rivers, lake and streams. The waters in the project area are classified as B-2. The designated beneficial uses of B-2 water bodies are drinking, culinary and food processing, after conventional treatment; bathing, swimming and recreation; growth and marginal propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; and agricultural and industrial water supply (ARM 17.30.624).

No increases are allowed above naturally occurring concentrations of sediment or suspended sediment (except as permitted in 75-5-318, MCA), settleable solids, oils, or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife." (ARM 17.30.624 (2f)).

Pollution resulting from storm drainage, storm sewer discharges, and non-point sources, including irrigation practices, road building, construction, logging practices, over-grazing and other practices must be eliminated or minimized. (ARM 17.30.637 (7))

Pending completion of a TMDL on a water body listed pursuant to 75-5-702, new or expanded non-point source activities affecting a listed water body may commence and continue provided those activities are conducted in accordance with reasonable land, soil, and water conservation practices...(75-5-703 (9b) MCA)

Reasonable land, soil, and water conservation practices" means methods, measures, or practices that protect present and reasonably anticipated beneficial uses. These practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Appropriate practices may be applied before, during, or after pollution-producing activities. (ARM 17.30.602 (24))

Enforcement Division • Permitting & Compliance Division • Planning, Prevention & Assistance Division • Remediation Division

**From:** "Michael Sanderson" <msanderson@enginc.com>  
**To:** "Laura Hunter (E-mail)" <llhu@deainc.com>  
**Date:** 6/4/03 4:28PM  
**Subject:** FW: STPU 1031 (2) CN 4666

Here was a response that we received via email from MT DEQ.

Michael

Michael P. Sanderson, PE, PTOE  
The Transportation Group  
a division of Engineering, Inc.  
1001 S. 24th St. W., Suite 200  
Billings, MT 59102  
(406)656-5255 fax (406)656-0967  
msanderson@enginc.com

-----Original Message-----

From: Mackin, Carole [mailto:cmackin@state.mt.us]  
Sent: Thursday, January 23, 2003 12:20 PM  
To: Michael Sanderson  
Subject: STPU 1031 (2) CN 4666

Michael Sanderson  
Transportation Group

The Montana DEQ has created a Website to allow easy access to the type of information you requested on Shiloh Road. This website is found at [http://www.deq.state.mt.us/ppa/mdm/303\\_d/303d\\_information.asp](http://www.deq.state.mt.us/ppa/mdm/303_d/303d_information.asp) <[http://www.deq.state.mt.us/ppa/mdm/303\\_d/303d\\_information.asp](http://www.deq.state.mt.us/ppa/mdm/303_d/303d_information.asp)> . The query system allows you to request information by county, stream name, or hydrologic unit code. I recommend using the 1996 list to determine if a waterbody is impaired. Then check the 2002 list for more up-to-date information on causes and sources.

In checking the website you will learn that the Shiloh project may affect the Yellowstone River which is listed for suspended sediment. This project can proceed if the activities are conducted in accordance with reasonable land, soil, and water conservation practices (MCA 75-5-703-10c). Reasonable land, soil, and water conservation practices are those that protect both water quality and the beneficial use of the water.

The Yellowstone River is classified B-2 and must meet the following standards:

The maximum allowable increase above naturally occurring turbidity is 10 nephelometric turbidity units except as permitted in ARM 17.30.637.

No increases are allowed above naturally occurring concentrations of sediment, settleable solids, oils, or floating solids, which will or are likely to create a nuisance or render the waters harmful, detrimental, or injurious to public health, recreation, safety, welfare, livestock, wild animals, birds, fish, or other wildlife.

17.30.637 Pollution resulting from storm drainage, storm sewer discharges, and non-point sources, including irrigation practices, road building, construction, logging practices, over-grazing and other practices must be eliminated or minimized as ordered by the department.

~~~~~  
~~~~~ Carole Mackin ~~~~~  
~ Department of Environmental Quality ~  
~~~~~ 406-444-7425 ~~~~~  
~~~~~ cmackin@state.mt.us ~~~~~  
~~~~~

**Laura Hunter - FW: STPU 1031(2) CN 4666 - Shiloh Road Corridor**

---

**From:** "Michael Sanderson" <msanderson@enginc.com>  
**To:** "Debra Perkins-Smith (E-mail)" <dps@deainc.com>, "Laura Hunter (E-mail)" <llhu@deainc.com>  
**Date:** 3/10/03 11:39 AM  
**Subject:** FW: STPU 1031(2) CN 4666 - Shiloh Road Corridor

---

You may have already gotten a copy of this email, but here it is for your info.

Michael

Michael P. Sanderson, PE, PTOE  
The Transportation Group  
a division of Engineering, Inc.  
1001 S. 24th St. W., Suite 200  
Billings, MT 59102  
(406)656-5255 fax (406)656-0967  
msanderson@enginc.com

-----Original Message-----

From: Ellerhoff, Thomas [<mailto:tellerhoff@state.mt.us>]  
Sent: Monday, March 10, 2003 10:04 AM  
To: Michael Sanderson  
Cc: Hill, Dave; Welch, Steve; Ryan, Jeff; Lovelace, Bonnie; Mackin, Carole  
Subject: STPU 1031(2) CN 4666 - Shiloh Road Corridor

TO: Michael P. Snaderson, PE, Project Manager

Please note the earlier e-mail message to the Montana Department of Transportation.

If you have any questions, call (406-444-5263) or send an e-mail.

Tom

From: Ellerhoff, Thomas  
Sent: Wednesday, December 04, 2002 3:32 PM  
To: Hill, Dave  
Cc: Riley, Jean; Compton, Art; Welch, Steve; Olsen, Sandi; Stockstad, Gordon; Sternberg, Stan; Sensibaugh, Jan; Galt, Dave  
Subject: RE: MDOT MEPA Reviews

Dave:

DEQ has done a little realignment. I work for Director Jan Sensibaugh, and do a variety of programmatic things. MEPA is one of those things.

file://C:\TEMP\GW\00001.HTM

I know Jean and Stan from their days with environmental health programs.

As I said in my comments to Karl, DEQ cooperates with all state agencies to the best of its resource abilities, and will continue to do so.

In the future, if your folks have requests, have those requests sent to me. I will make sure the requests are addressed. If DEQ doesn't have the resources to accomplish the request, we will work with you to figure out a solution.

Jean's Sept. 17, 2002, letter mentioned TMDLs. I discussed the matter with Art Compton, administrator of the Planning, Prevention & Assistance Division, and during that discussion he mentioned the position MDOT and DEQ were going to share to address TMDLs. It could be the matter has somehow got sidetracked in your reorganization. When you have some time, I believe Art would like to continue the discussion about the proposed position. You can send Art an e-mail or call (444-6754) to talk about the matter.

If you have any questions, don't hesitate to call me (444-5263) or send me an e-mail.

Tom

DEPARTMENT OF NATURAL RESOURCES  
AND CONSERVATION  
BILLINGS WATER RESOURCES REGIONAL OFFICE



BRIAN SCHWEITZER  
GOVERNOR

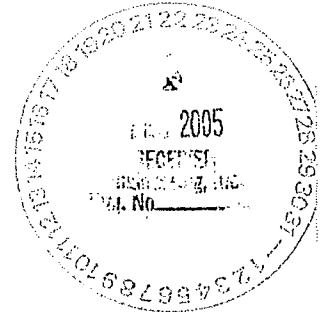
AIRPORT BUSINESS PARK  
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415  
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

February 17, 2005



Mr. Kirk Spalding, PE  
Project Manager  
1300 North Transtech Way  
Billings, Montana 59102


Reference: STPU 1031 (2) CN 4666  
Shiloh Road Corridor Project  
E.I. No. 01103

Dear Sir,

As per our conversation of 02/16/2005, we are involved with the water rights and use. We have responded twice to this request and please find the copy of the letter to Mr. Bruce Barrett of MDT that I have enclosed. I have also included a memo copy of the calls that I have made a second time (find the enclosed chart that outlines the telephone numbers) and the answer of each department spokesperson. We have not found any conflicts to your proposed construction in this search. If any questions remain unanswered, please call me at 406-247-4424.

Please note the attached letter dated January 17, 2005. Thank you for your attention.

Sincerely,

  
Robert B. Morehead, Jr.  
Water Resource Specialist

Enc: Correspondence Record  
January 17, 2005 Letter

Cc: Keith Kerbel, Regional Manager, Regional Manager, Department of Water  
Resources  
Bruce H. Barrett, MDT Billings District (No. 5) Administrator

DEPARTMENT OF NATURAL RESOURCES  
AND CONSERVATION  
BILLINGS WATER RESOURCES REGIONAL OFFICE



BRIAN SCHWEITZER  
GOVERNOR

AIRPORT BUSINESS PARK  
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415  
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

January 17, 2005

Mr. Bruce Barrett  
Montana Department of Transportation  
District 5  
424 Morey St.  
Billings, MT 59104-1978  
406-252-4138

Dear Sir:

We would like to make two comments in reference to the proposed Shiloh Road Improvements regarding the irrigation systems and the final use of the new route.

The first point is that in checking our ownership map, it appears that our agency does not own any land along this route that would be affected, but I did notice that there are private irrigation canals that cross this route. We would like to point out that you should communicate with the owners to insure that the canal redesigns will not affect the hydraulics in the appropriate sections. Concerns expressed by irrigators are that the existing flow line, grade, and size must be maintained to insure the integrity of the irrigation system.

The second point that is connected to DNRC Water Resources Department is that the improvements to the Shiloh Road should be incorporated as part of a design that would be a larger Inner Belt or Outer Belt System around the city of Billings and to alleviate the problems in the Airport Road and divert traffic north until a connection between Route 87 and Route 3 is made. A connection could be made to the Molt Road or Zimmerman Trail for this diversion and it would eliminate much of the traffic problems in the East Billings, the Heights areas and the airport congestion. Road construction on the Molt route would lend itself to minimal grades and costs.

Thank you for the opportunity for us to read your proposal and comment. If we can be of any assistance, please call us.

Sincerely,

A handwritten signature in cursive script that reads "Robert B. Morehead, Jr.".

Robert B. Morehead, Jr  
Water Resource Specialist

Cc: Keith Kerbel, Regional Manager

Fred Bente, Consultant Design Project Manager  
Thomas S. Martin, P.E., MDT Consultant Design Engineer  
John H. Horton, Jr., MDT Right-of-Way Bureau Chief  
Jean A. Riley, P.E., MDT Environmental Services Bureau Chief  
Carl D. James, FHWA Montana Division Field Operations Engineer  
Laura Meyer, David Evans and Associated, Inc.



DEPARTMENT OF NATURAL  
RESOURCES AND CONSERVATION  
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK  
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415  
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

January 23, 2003

Mr. Michael P. Sanderson  
Project Manager  
The Transportation Group, ENGINEERING, INC.  
P.O. Box 81345  
Billings, Montana 59108-1345

Subject: STPU 1031 (2) CN 4666  
Shiloh Road Corridor Environmental Assessment  
Response to Request Letter of January 16, 2003

Dear Mr. Sanderson:

This letter is in response to the request for information request. Please find enclosed the water rights that exist in the areas that you are proposing for your project. This list includes point of diversion, point of use and the well reports and consists of 56 pages.

The project location, as we understand, is on Shiloh Road between the Canyon Creek Bridge and Grand Avenue and at this time, MDNRC has no projects planned in this area that would interfere with the project you have outlined.

- Historical, archaeological or paleontological resource discoveries could be requested from Patrick Rennie – Archaeology – 1-406-444-2882
- Mining activities, mineral leases, etc. can be requested from Joe Stephens – 1-406-444-4435
- Specific leases or land uses can be requested from Julie David – Mineral Leases and Lands – 1-406-444-4576
- Timber Requests from Forest Management Bureau – Pete Van Sickle – 1-406-542-4306
- Publicly-owned State Lands for any use – Harvey Nyberg - Fish, Wildlife and Parks – 1-406-247-4306

If you have any further questions, please contact me at 1-406-247-4424 or the appropriate person mentioned above. Thank you informing us about this project.

Sincerely,

*Robert B. Morehead, Jr.*

Robert B. Morehead, Jr.  
Water Resource Technician

Note: The DNRC Water Right Listing  
by Owner Name is available from MDT





P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0581 • tel 406.444.3009 • <http://mtnhp.org>

January 24, 2005

Kirk Spalding  
Project Manager  
Engineering, Inc.  
1300 North Transtech Way  
Billings, MT 59102

Dear Kirk,

I am writing in response to your request for information on plant and animal species of special concern in the vicinity of the Shiloh Road Corridor Project Expansion in Section 33, T01N, R25E, and Sections 2, 3, 10, 11, 14, 15, 22, and 23, T01S, R25E in Yellowstone County. We checked our databases for information in this general area and have enclosed 5 species of concern reports, one map and explanatory material.

Please keep in mind the following when using and interpreting the enclosed information and maps:

- (1) These materials are the result of a search of our database for species of concern that occur in an area defined by requested township, range and section with an additional one-mile buffer surrounding the requested area. This is done to provide you with a more inclusive set of records and to capture records that may be immediately adjacent to the requested area.
- (2) On the map, polygons represent one or more source features as well as the locational uncertainty associated with the source features. A source feature is a point, line, or polygon that is the basic mapping unit of an EO Representation. The recorded location of the occurrence may vary from its true location due to many factors, including the level of expertise of the data collector, differences in survey techniques and equipment used, and the amount and type of information obtained. Therefore, this inaccuracy is characterized as locational uncertainty, and is now incorporated in the representation of an EO. If you have a question concerning a specific EO, please do not hesitate to contact us.
- (3) Location information for animals represents occupied breeding habitat; location information for plants represents known occurrences of plant species, and, like animals, has an implied range that may not be fully conveyed by the mapped data. Most locations are depicted as points, but some, especially those that cover large area, are depicted as polygons on the map. The approximate boundaries of these polygons are color-coded to help differentiate vertebrate classes and plants.
- (4) This report may include sensitive data, and is not intended for general distribution, publication or for use outside of your agency. In particular, public release of specific location information may jeopardize the welfare of threatened, endangered, or sensitive species or communities.
- (5) The accompanying map(s) display management status, which may differ from ownership. Also, this report may include data from privately owned lands, and approval by the landowner is advisable if specific location information is considered for distribution. Features shown on this map do not imply public access to any lands.
- (6) Additional biological data for the search area(s) may be available from other sources. We suggest you contact the U.S. Fish and Wildlife Service for any additional information on threatened and endangered species (406-449-5225). Also,

Electronic access to the Montana Natural Heritage Program is available at URL  
<http://mtnhp.org>

significant gaps exist in the Heritage Program's fisheries data, and we suggest you contact the Montana Rivers Information System for information related to your area of interest (406-444-3345).

- (7) Additional information on species habitat, ecology and management is available on our web site in the Plant and Animal Field Guides, which we encourage you to consult for valuable information. You can access these guides at <http://mtnhp.org>. General information on any species can be found by accessing the link to NatureServe Explorer.

The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments. The information is intended for project screening only with respect to species of concern, and not as a determination of environmental impacts, which should be gained in consultation with appropriate agencies and authorities.

We have a new data request system available via the internet. The URL is:

<http://nr.is.state.mt.us/reqapp/userMain.htm>

I've assigned your username: kirk12

And password:

You may wish to change the password as a security measure.

I hope the enclosed information is helpful to you. Please feel free to contact me at (406) 444-3009 or via my e-mail address, below, should you have any questions or require additional information.

Sincerely,



Kathy Lloyd  
Montana Natural Heritage Program  
[klloyd@mt.gov](mailto:klloyd@mt.gov)

- PLEASE READ -

In the past, the Montana Natural Heritage Program represented the majority of element occurrence (EO) locations as points, as well as a few polygons. During the summer of 2002, the Heritage Program adopted a new mapping methodology that depicts EOs as polygons. These polygons represent one or more source features as well as the locational uncertainty associated with the source features. A source feature is a point, line, or polygon that is the basic mapping unit of an EO Representation. The recorded location of the occurrence may vary from its true location due to many factors, including the level of expertise of the data collector, differences in survey techniques and equipment used, and the amount and type of information obtained. Therefore, this inaccuracy is characterized as locational uncertainty, and is now incorporated in the representation of an EO.

As we map new EOs, the polygons we create will closely match known locations. However, we acknowledge that there are problems with existing data that was migrated from the old methodology to the new methodology. Some EOs became HUGE polygons that include unreasonable areas given the 'LOCATION' data for the record and the habitat requirements of the species/plant community. We are currently reviewing the existing EOs to reduce the polygonal representation to better reflect the actual occurrence. Although the work has high priority, it will take some time to complete. We appreciate your understanding during this period. If you have a question concerning a specific EO, please do not hesitate to contact us.

# Montana Natural Heritage Program

P.O. Box 201800  
1515 East Sixth Avenue  
Helena, Montana 59620-1800  
(406) 444-3009  
<http://nris.state.mt.us>

## Explanation of Element Occurrence Reports

Since 1985, the Montana Natural Heritage Program (MTNHP) has been compiling and maintaining an inventory of the elements of biological diversity in Montana. This inventory includes plant species, animal species, plant communities, and other biological features that are rare, endemic, disjunct, threatened or endangered throughout their range in Montana, vulnerable to extirpation from Montana, or in need of further research.

Individual species, communities, or biological features are referred to as "elements." An "element occurrence" generally falls in one of the following categories:

**Plants:** A documented location of a plant population. In some instances, adjacent, spatially separated clusters are considered subpopulations and are grouped as one occurrence (e.g., the subpopulations occur in ecologically similar habitats, and are within approximately one air mile of one another).

**Animals with limited mobility** (most invertebrates, amphibians, reptiles, small mammals, most fish): The location of a specimen collection or of a verified sighting; assumed to represent a breeding population. Additional collections or sightings are often appended to the original record.

**Mobile or migratory animals** (most birds and larger mammals, some fish): Breeding areas (including nesting territories, dens and leks) and significant aggregation sites (winter feeding areas, staging grounds, or hibernacula).

**Communities:** All contiguous, high-quality habitat as defined by physical and biological features.

**Other:** Significant biological features not included in the above categories, such as bird rookeries, peatlands, or state champion trees.



The quantity and quality of data contained in MTNHP reports is dependent on the research and observations of the many individuals and organizations who contribute information to the program.

Please keep in mind that the absence of information for an area does not mean the absence of significant biological features. Reports produced by the Montana Natural Heritage Program summarize information known to the program at the time of a request. These reports are not intended as a final statement on the elements or areas being considered, nor are they a substitute for on-site surveys which may be required for environmental assessments.

As a user of MTNHP, your contributions of data are essential to maintaining the accuracy of our data bases. New or updated location information for all species of special concern is always welcome.

We encourage you to visit our website at <http://nris.state.mt.us/mtnhp/>. On-line tools include species lists, an electronic version of *Montana Bird Distribution*, and search capabilities by county, management unit, or USGS 7.5' quadrangle. Also available is the *Montana Rare Plant Field Guide*, which contains photos, high-quality diagnostic illustrations, and supporting information for over 300 rare plant species in Montana.

Certain codes and abbreviations are used in element occurrence reports. Although many of these are very straightforward, the following explanations should answer most questions.

### Global Rank and State Rank

Taxa are evaluated and ranked by MTNHP on the basis of their global (range-wide) status, and their state-wide status according to a standardized procedure.

For each level of distribution, global and state, species are assigned a numeric rank ranging from 1 (critically imperiled) to 5 (demonstrably secure). For example, Clustered lady's-slipper (*Cypripedium fasciculatum*) is ranked G4 S2. That is, globally the species is apparently secure, while in Montana it is imperiled because of rarity, or because of other factors making it demonstrably vulnerable to extirpation.

#### Rank    Definition

- |   |                                                                                                                                          |
|---|------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Critically imperiled because of extreme rarity, or because of some factor of its biology making it especially vulnerable to extirpation. |
| 2 | Imperiled because of rarity, or because of other factors demonstrably making it very vulnerable to extinction throughout its range.      |
| 3 | Vulnerable because of rarity, or found in a restricted range even though it may be abundant at some of its locations.                    |
| 4 | Apparently secure, though it may be quite rare in parts of its range, especially at the periphery.                                       |
| 5 | Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery.                                     |
| U | Possibly in peril but status uncertain; more information needed.                                                                         |
| H | Historical, known only from records over 50 years ago; may be rediscovered.                                                              |
| X | Believed to be extinct; historical records only.                                                                                         |

#### Other Global and State Rank codes:

- |   |                                                                                                                                                                                                                                             |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| T | Rank for a subspecies or variety; appended to the global rank for the full species, e.g., G4T3.                                                                                                                                             |
| Q | Taxonomic questions or problems involved; more information needed.                                                                                                                                                                          |
| ? | Inexact or uncertain.                                                                                                                                                                                                                       |
| Z | Ranking not applicable.                                                                                                                                                                                                                     |
| A | Accidental in the state. Includes species (usually birds or butterflies) recorded very infrequently, hundreds or thousands of miles outside their usual range.                                                                              |
| B | A state rank modifier indicating breeding status for a migratory species. Example: S1B, SZN = breeding occurrences for the species are ranked S1 (critically imperiled) in the state; non-breeding occurrences are not ranked in the state. |
| # | A modifier to SX or SH: the species has been reintroduced but the population is not yet established.                                                                                                                                        |

### U. S. Fish And Wildlife Service Endangered Species Act Status

Abbreviations indicate the categories defined in the U.S. Fish and Wildlife Service Notice of Review and indicate the status of a taxon under the federal Endangered Species Act of 1973 (16 U.S.C.A. §1531-1543 (Supp. 1996)).

Note: the categories C2, 3B and 3C are no longer maintained by the U.S. Fish and Wildlife Service (61 FR 7596, Feb. 28, 1996).

Current categories are:

- |    |                                                                                                                  |
|----|------------------------------------------------------------------------------------------------------------------|
| LE | listed endangered                                                                                                |
| LT | listed threatened                                                                                                |
| PE | proposed endangered                                                                                              |
| PT | proposed threatened                                                                                              |
| C  | candidate: Substantial information exists in U.S. Fish and Wildlife files on biological vulnerability to support |

proposals to list as threatened or endangered.

- NL not listed or no designation (see below)  
 XN non-essential experimental population

A species can have more than one federal designation if the species' status varies within its range. In these instances, the Montana designation is listed first. Example: LELT = species is listed as endangered in Montana; elsewhere in its range it is listed as threatened.

### U.S. Forest Service Status

The status of species on Forest Service lands as defined by the U.S. Forest Service manual (2670.22). These taxa are listed as such by the Regional Forester (Northern Region) on National Forests in Montana. Species are listed as:

- T/E/P listed as Threatened (LT) or Endangered (LE) under the Endangered Species Act or proposed for listing (P), and known or suspected to occur on national forests.
- S sensitive species, subspecies or variety, for which the Regional Forester has determined there is a concern for population viability rangewide or in the region.

### Bureau of Land Management Status

The status of species on Bureau of Land Management land is defined by the BLM 6840 manual and designated by the Montana State Office of the BLM in 1996:

- S sensitive species: proven to be imperiled in at least part of its range and documented to occur on BLM lands.
- W watch species: either known to be imperiled and suspected to occur on BLM lands, suspected to be imperiled and documented on BLM lands, or needing further study for other reasons.

### Other terms that may be used in this report

USGS quadrangle – Name of the 7.5-minute USGS topographic map(s) where the population is located.

Township, range, section, TRS comments - legal description of the centroid of the population and, if known, additional townships or sections. TRS locators may be based on unsurveyed townships; in such cases, the locators are derived from U. S. Forest Service visitor maps or from BLM surface management status maps. This is done for convenience in describing species locations; the information does not necessarily indicate legal boundaries.

Precision – the level of location accuracy of the record.

S = accuracy of location is within an area of approximately 10 acres

M = accuracy of location is within a radius of approximately 1.5 miles

G = location is a place-name only, or within a radius of approximately 5 square miles.

Last observation: date the element was last observed extant at the site (not necessarily the date the site was last visited).

Land Owner/manager – the ownership or management of the land on which the element occurs. Areas are generally listed from smallest to largest. In most instances, this information is derived from U.S. Forest Service visitor maps or from BLM surface management status maps.

Please remember that this report is a summary of information. Additional data are available on most sites and species

If you have questions or need further assistance, please contact us either by phone at (406/444-0914), e-mail (mtnhp@nris.state.mt.us) or at the mailing address shown on the first page.

# Montana Natural Heritage Program

Map Label	Scientific Name	Common Name
1	Trionyx spiniferus	Spiny Softshell

## Biological Information

Species of Concern (Y)/Potential Concern (W): Y

Element Subnational ID	11382	EO Number	1	Global Rank	G5	State Rank	S3
USFWS Endangered Species Status		Forest Service Status		BLM Status		SENSITIVE	

Observation Dates: Last 1997 First 1973

**EO Data**  
Since 1970: 4 reports on the Yellowstone, 5 reports on the Tongue and one on the Powder. The boundaries for this occurrence encompass all reported observations in the Yellowstone River drainage. Specific observation data available from MTNHP.

**General Description**  
Large rivers and their sandy banks (up to 50 meters from water - used for nesting).

**General Comments**  
Note 3 historic reports from the Big Horn River drainage, around Crow Agency.

**References**  
Flath, Dennis L. Montana Department of Fish, Wildlife and Parks, Wildlife Research Bureau, FWP Building, Montana State University Campus, 1400 South 19th Street, Bozeman, MT 59717-0001. 406/944-6354. Personal communication to the Montana Natural Heritage Program.

**Specimen**  
ELSER, A.A. (S.N.). 22 AUGUST 1973. SPECIMEN #5770, 5771. MSBU.

**Representation Accuracy** Low (>0%, <=20%)

**Size (acres): Observed** **EO Rep. Size (acres):** 53048.7

**Min. Elevation (feet)** 2,000 **Max. Elevation (feet)** 3,100

**County** Big Horn, Custer, Dawson, Prairie, Rosebud, Treasure, Yellowstone

**Land Owner/Manager** BLM: BILLINGS FIELD OFFICE, BLM: MILES CITY FIELD OFFICE, PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE), STATE TRUST LAND



# Montana Natural Heritage Program

Map Label	Scientific Name	Common Name
2	Lampropeltis triangulum	Milk Snake

## Biological Information

Species of Concern (Y)/Potential Concern (W): Y

Element Subnational ID	14060	EO Number	1	Global Rank	G5	State Rank	S2
USFWS Endangered Species Status		Forest Service Status		BLM Status		SENSITIVE	

Observation Dates: Last 1971-05- First 1909-08-00

### EO Data

### General Description

**General Comments** 7/17/47: SPECIMEN COLLECTED BY DEE JAY NELSON. CA. 1949: SPECIMEN COLLECTED BY KENNETH JACOBSON. 5/71: SPECIMEN COLLECTED BY B.E. DAVIS (FIRST PRESERVED IN VODKA). ALSO REPORTED BY LAURIE J. VITT [LETTER OF 8 JANUARY, 1996 TO JIM REICHEL] AS "COMMON IN RATTLESNAKE BUTTE" (NE OF TOWN) AND "WEST OF BILLINGS OFF OF MOLT HIGHWAY PAST RANCHETTES." 1909: MUSEUM SPECIMEN IDENTIFIED AS LAMPROPELTIS CALLIGASTER IN RECORDS.

**References** Nelson, D. J. 1948. LAMPROPELTIS TRIANGULUM GENTILIS in Montana. Herpetologica 4:170.  
Nelson, D. J. 1950. LAMPROPELTIS TRIANGULUM GENTILIS in Montana. Herpetologica 6:41.

**Specimen** DAVIS, B. E. (S.N.). 1971. SPECIMEN# 5406. MONT.  
UNKNOWN COLLECTOR. 1909. SPECIMEN #082315. USNM.

**Representation Accuracy** Low ( >0%, <=20% )

**Size (acres): Observed**

**EO Rep. Size (acres):** 49431.4

**Min. Elevation (feet)** 3,100

**Max. Elevation (feet)** 3,740

**County** Yellowstone

**Land Owner/Manager** PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Map Label	Scientific Name	Common Name
3	Heterodon nasicus	Western Hognose Snake

## Biological Information Species of Concern (Y)/Potential Concern (W): Y

Element Subnational ID	13537	EO Number	12	Global Rank	G5	State Rank	S2
USFWS Endangered Species Status		Forest Service Status		BLM Status		SENSITIVE	

Observation Dates: Last 1909-08-07 First 1909-08-07

EO Data POPULATION REPORTED.

General Description

General Comments RECORD BASED ON MUSEUM SPECIMEN.

References

Specimen STREETER, D. D. 1909. SPECIMEN #044346. USNM.

Representation Accuracy Low (>0%, <=20%)

Size (acres): Observed

EO Rep. Size (acres): 49431.4

Min. Elevation (feet) 3,200

Max. Elevation (feet) 3,740

County Yellowstone

Land Owner/Manager BLM: BILLINGS FIELD OFFICE, PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE), STATE TRUST LAND

# Montana Natural Heritage Program

Map Label	Scientific Name	Common Name
4	<i>Haliaeetus leucocephalus</i>	Bald Eagle

## Biological Information Species of Concern (Y)/Potential Concern (W): Y

Element Subnational ID	11331	EO Number	836	Global Rank	G4	State Rank	S3
USFWS Endangered Species Status	PS:LT,PDL	Forest Service Status		THREATENED		BLM Status	SPECIAL STATUS

Observation Dates: Last

First

EO Data

General Description

General Comments

References

Specimen

Representation Accuracy Low (>0%, <=20%)

Size (acres): Observed

EO Rep. Size (acres): 53590.2

Min. Elevation (feet) 2,270

Max. Elevation (feet) 6,800

County Big Horn, Carbon, Custer, Park, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, Yellowstone

Land Owner/Manager BLACK-FOOTED FERRET AREA OF CRITICAL ENVIRONMENTAL CONCERN, BLM: BILLINGS FIELD OFFICE, BLM: BUTTE FIELD OFFICE, BLM: MILES CITY FIELD OFFICE, CROW INDIAN RESERVATION, FORT KEOGH LIVESTOCK & RANGE RESEARCH LABORATORY, GALLATIN NATIONAL FOREST, GARDINER RANGER DISTRICT, MONTANA LAND RELIANCE - CONSERVATION EASEMENTS, POMPEYS PILLAR NATIONAL MONUMENT, PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE), REGION 3, MONTANA FISH WILDLIFE & PARKS, REGION 5, MONTANA FISH WILDLIFE & PARKS, REGION 7, MONTANA FISH WILDLIFE & PARKS, STATE TRUST LANDS - CENTRAL, STATE TRUST LANDS - EASTERN, STATE TRUST LANDS - SOUTHERN, THE NATURE CONSERVANCY - CONSERVATION EASEMENTS, YELLOWSTONE NATIONAL PARK

Map Label	Scientific Name	Common Name
5	Centrocercus urophasianus	Greater Sage-grouse

Biological Information
Species of Concern (Y)/Potential Concern (W): Y

Element Subnational ID	10626	EO Number	1360	Global Rank	G4	State Rank	S3
USFWS Endangered Species Status		Forest Service Status		SENSITIVE		BLM Status	SENSITIVE

Observation Dates: Last
First

EO Data

General Description

General Comments

References

Specimen

# Montana Natural Heritage Program

Representation Accuracy	Medium ( >20%, <=80% )		
Size (acres): Observed		EO Rep. Size (acres):	1781006
Min. Elevation (feet)	1,969	Max. Elevation (feet)	9,744
County	Beaverhead, Big Horn, Blaine, Carbon, Carter, Chouteau, Custer, Dawson, Deer Lodge, Fallon, Fergus, Gallatin, Garfield, Golden Valley, Hill, Madison, McCone, Meagher, Musselshell, Park, Petroleum, Phillips, Powder River, Prairie, Rosebud, Silver Bow, Stillwater, Sweet Grass, Treasure, Valley, Wheatland, Yellowstone		
Land Owner/Manager	ACID SHALE-PINE FOREST AREA OF CRITICAL ENVIRONMENTAL CONCERN, BANNACK STATE HISTORIC PARK, BEAVERHEAD-DEERLODGE NATIONAL FORESTS, DILLON RANGER DISTRICT, BEAVERHEAD-DEERLODGE NATIONAL FORESTS, WISDOM RANGER DISTRICT, BEAVERHEAD-DEERLODGE NATIONAL FORESTS, WISE RIVER RANGER DISTRICT, BEAVERHEAD-DEERLODGE NATIONAL FORESTS, MADISON RANGER DISTRICT, BIG BEND OF THE MILK RIVER AREA OF CRITICAL ENVIRONMENTAL CONCERN, BITTER CREEK AREA OF ENVIRONMENTAL CONCERN, BLACK-FOOTED FERRET AREA OF CRITICAL ENVIRONMENTAL CONCERN, BLM WILDERNESS STUDY AREAS, BLM: BILLINGS FIELD OFFICE, BLM: BUTTE FIELD OFFICE, BLM: DILLON FIELD OFFICE, BLM: LEWISTOWN FIELD OFFICE, BLM: MALTA FIELD OFFICE, BLM: MILES CITY FIELD OFFICE, BOWDOIN WETLANDS MANAGEMENT DISTRICT, BREWER CONSERVATION EASEMENT, CENTENNIAL MOUNTAINS PRIMITIVE AREA, CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE, CLARK CANYON RESERVOIR, CLIFF LAKE RESEARCH NATURAL AREA, CMR WETLANDS MANAGEMENT DISTRICT, CONSERVATION EASEMENT, MONTANA FISH WILDLIFE & PARKS, COW CREEK AREA OF CRITICAL ENVIRONMENTAL CONCERN, CROW INDIAN RESERVATION, CUSTER NATIONAL FOREST, ASHLAND RANGER DISTRICT, CUSTER NATIONAL FOREST, BEARTOOTH RANGER DISTRICT, DNRC WATER CONSERVATION PROJECT, DUCKS UNLIMITED - CONSERVATION EASEMENTS, FORT BELKNAP INDIAN RESERVATION, FORT KEOGH LIVESTOCK & RANGE RESEARCH LABORATORY, FORT PECK DAM & RESERVOIR, FORT PECK INDIAN RESERVATION, FOURTH RIDGE RESEARCH NATURAL AREA, GALLATIN NATIONAL FOREST, BIG TIMBER RANGER DISTRICT, GALLATIN NATIONAL FOREST, HEBGEN LAKE RANGER DISTRICT, GRAVELLY-BLACKTAIL WILDLIFE MANAGEMENT AREA, HALFBREED LAKE NATIONAL WILDLIFE REFUGE, LAKE MASON NATIONAL WILDLIFE REFUGE, LAKE MASON NWR RESEARCH NATURAL AREA, LEE METCALF WILDERNESS, TAYLOR-HILGARD UNIT, LEWIS & CLARK NATIONAL FOREST, KINGS HILL RANGER DISTRICT, LEWIS & CLARK NATIONAL FOREST, MUSSELSELL RANGER DISTRICT, LINE CREEK PLATEAU RESEARCH NATURAL AREA, MANNING CORRAL PRAIRIE DOG TOWN RESEARCH NATURAL AREA, MEETEETSE SPIRES AREA OF CRITICAL ENVIRONMENTAL CONCERN, MILK RIVER PROJECT, MONTANA LAND RELIANCE - CONSERVATION EASEMENTS, NORTHERN CHEYENNE INDIAN RESERVATION, PRAIRIE DOG TOWNS AREA OF CRITICAL ENVIRONMENTAL CONCERN, RED ROCK LAKES NATIONAL WILDLIFE REFUGE, RED ROCK LAKES WILDERNESS, REGION 3, MONTANA FISH WILDLIFE & PARKS, REGION 4, MONTANA FISH WILDLIFE & PARKS, REGION 5, MONTANA FISH WILDLIFE & PARKS, REGION 6, MONTANA FISH WILDLIFE & PARKS, REGION 7, MONTANA FISH WILDLIFE & PARKS, ROBB-LEDFORD WILDLIFE MANAGEMENT AREA, ROCK CREEK PENINSULA PUBLIC USE NATURAL AREA, SHEEP EXPERIMENT STATION, SHEEP MOUNTAIN RESEARCH NATURAL AREA, SMOKY BUTTE AREA OF CRITICAL ENVIRONMENTAL CONCERN, STATE TRUST LANDS - CENTRAL, STATE TRUST LANDS - EASTERN, STATE TRUST LANDS - NORTHEAST, STATE TRUST LANDS - SOUTHERN, STATE TRUST LANDS - SOUTHWEST, THE NATURE CONSERVANCY - CONSERVATION EASEMENTS, TNC - MATADOR RANCH PRESERVE, TONGUE RIVER WATER CONSERVATION PROJECT, TURTLE MOUNTAIN ALLOTTED LANDS, UL BEND NATIONAL WILDLIFE REFUGE, UL BEND WILDERNESS, UPPER MISSOURI RIVER BREAKS NATIONAL MONUMENT, UPPER MISSOURI WILD & SCENIC RIVER, WAR HORSE NATIONAL WILDLIFE REFUGE		

# Montana Species of Concern

## Shiloh Road Corridor Project Extension

- Search Area
- Biological Data
  - Endemic animal
  - Community
  - Invertebrate animal
  - Nonvascular plant
  - Other
  - Vascular plant

### Conservation Easements

- Special Designations
  - Wilderness (ACEC, RNA, PRM)
  - Research Natural Areas (all agencies)
  - Wilderness (all agencies)
  - Wild and Scenic Rivers (all agencies)
  - Status
  - Land
  - Bureau of Land Management
  - US Forest Service
  - Other US Dept of Agriculture
  - Bureau of Reclamation
  - Army Corps of Engineers & US Dept of Defense
  - National Park Service
  - Tribal
  - State Trust
  - Montana Fish, Wildlife, & Parks
  - University of Montana
  - Plum Creek
  - Private conservation
  - Other private
  - Water



Species locations depicted outside the search area have imprecisely known locations and may actually occur within the search area.

Not all legend items may occur on map.

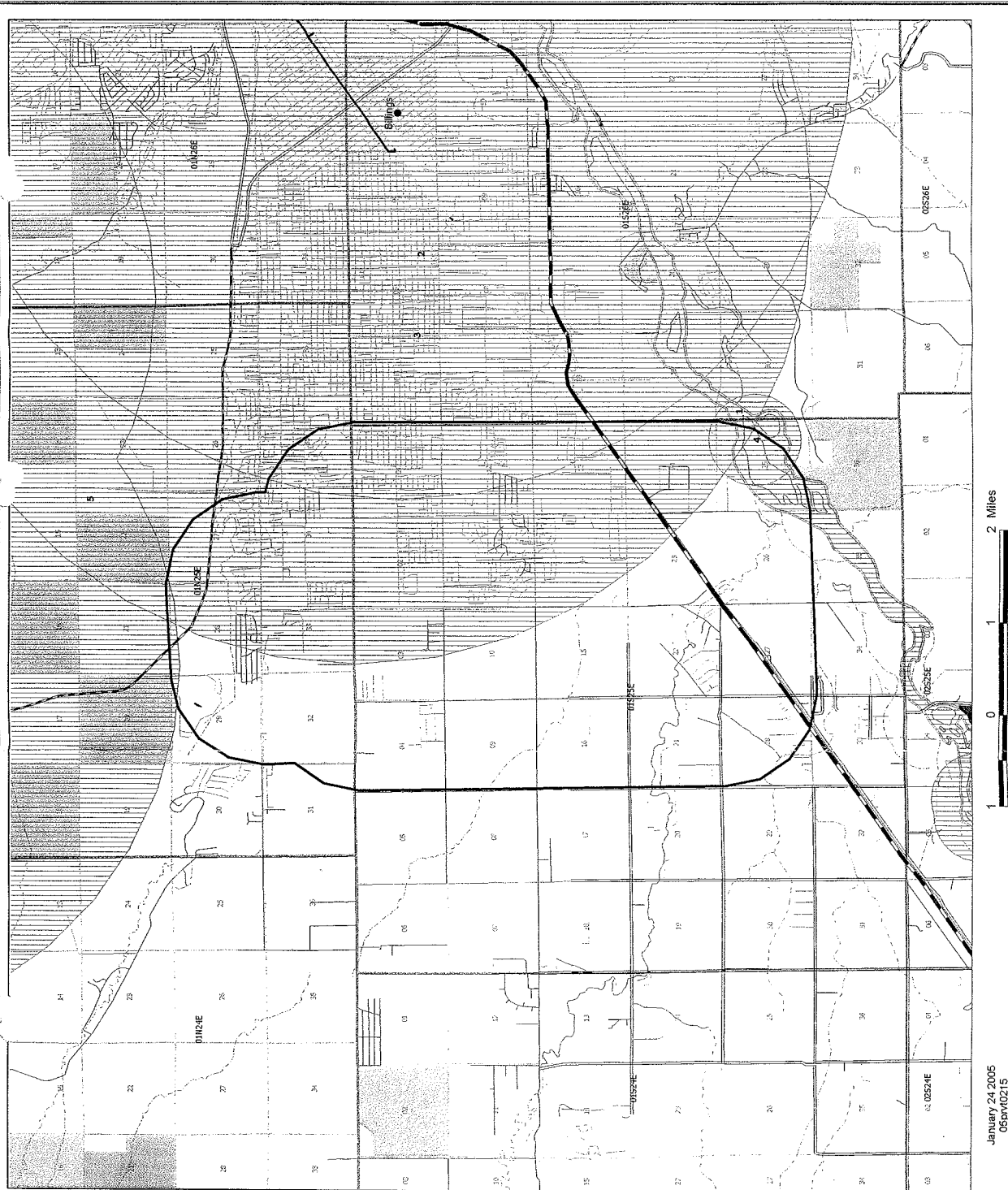
Features shown on this map do not imply public access to any lands.

This map displays management status, which may differ from ownership.

Refer to accompanying documentation for full explanation of map features.

**MONTANA**  
**Natural Heritage**  
**Program**

Natural Resource Information System  
 Montana State Library  
 Helena, MT 59601-1800  
 (406) 444-5324 mnhp@state.mt.us





P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0581 • tel 406.444.3009 • <http://nris.state.mt.us>

January 22, 2003

Michael P. Sanderson, PE  
The Transportation Group  
P.O. Box 81345  
Billings, Montana 59108-1345

Dear Michael,

I am writing in response to your request for information on plant and animal species of concern in the vicinity of the Shiloh Road Corridor Environmental Assessment. We checked our databases for information in this general area and have enclosed 2 species of concern reports, one map and explanatory material.

Please keep in mind the following when using and interpreting the enclosed information and maps:

- (1) These materials are the result of a search of our database for species of concern that occur in an area defined by the requested road segment with an additional one-mile buffer surrounding the requested area. This is done to provide you with a more inclusive set of records and to capture records that may be immediately adjacent to the requested area.
- (2) In the report, the term "precision" reflects the quality of the location information. S (second) precision is used when the location of the collection/observation is known within a three-second radius (approximately 10 acres); M (minute) precision is used when the location of the collection /observation is known within a one minute radius (approximately 1.5 miles); and G (general) precision is used when the location of the record/collection is known within a 5 mile radius or to a place name only. Some species locations outside the selection area have imprecisely-known locations and may actually occur within the selection area.
- (3) Location information for animals represents occupied breeding habitat; location information for plants represents known occurrences of plant species, and, like animals, has an implied range that may not be fully conveyed by the mapped data. Most locations are depicted as points, but some, especially those that cover large area, are depicted as polygons on the map. The approximate boundaries of these polygons are color-coded to help differentiate vertebrate classes and plants.
- (4) This report may include sensitive data, and is not intended for general distribution, publication or for use outside of your agency. In particular, public release of specific location information may jeopardize the welfare of threatened, endangered, or sensitive species or communities.
- (5) The accompanying map(s) display management status, which may differ from ownership. Also, this report may include data from privately owned lands, and approval by the landowner is advisable if specific location information is considered for distribution. Features shown on this map do not imply public access to any lands.
- (6) Additional biological data for the search area(s) may be available from other sources. We suggest you contact the U.S. Fish and Wildlife Service for any additional information on threatened and endangered species (406-449-5225). Also, significant gaps exist in the Heritage Program's fisheries data, and we suggest you contact the Montana Rivers Information System for information related to your area of interest (406-444-3345).

- (7) The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments.

We have a new data request system available via the internet. The URL is:

<http://nris.state.mt.us/reqapp/userMain.htm>

I've assigned your username: msanderson

And password: msand491

You may wish to change the password as a security measure.

I hope the enclosed information is helpful to you. Please feel free to contact me at (406)-444-3290 or via my e-mail address, below, should you have any questions or require additional information.

Sincerely,



Martin P. Miller, Data Assistant  
Montana Natural Heritage Program  
([martinm@state.mt.us](mailto:martinm@state.mt.us))



1/22/2003

Montana Natural Heritage Program  
Species of Concern  
Shiloh Road Corridor Environmental Assessment

**Scientific Name:** HALIAEETUS LEUCOCEPHALUS

**Common Name:** BALD EAGLE

**Forest Service Status:** THREATENED

**Global Rank:** G4

**USFWS Endangered Species Act:** (PS:LT,PDL)

**State Rank:** S3B,S3N

**BLM Status:** SPECIAL STATUS

**Occurrence Type:**

**Species occurrence data:**

STATUS: CURRENT. THE MONTANA BALD EAGLE WORKING GROUP (BEWG) ANNUALLY SURVEYS AND COLLECTS DATA ON NEST SITES. CONTACT BEWG COORDINATOR DENNIS FLATH OF MONTANA FISH, WILDLIFE & PARKS (406-994-6354) FOR MORE INFORMATION ABOUT THIS OCCURRENCE.

**Last observation:** 1999

**Size (acres):**

**General site description:**

**Land owner/manager:**

BLM: BILLINGS FIELD OFFICE; STATE TRUST LAND; PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

**Comments:**

**Information source:**

FLATH, D. 2000. [MEMO LISTING LOCATION OF BALD EAGLE NESTS AS OF AUGUST, 1999.] UNPUBLISHED REPORT. 11PP.

**Survey site name:** YEGEN

**County:** YELLOWSTONE

**USGS quadrangle:** YEGEN

**Precision:** M

**Elevation (ft):** 3170

**Location:**

SITE IS CA. 2.5 AIR MILES SOUTHWEST OF THE WEST EDGE OF BILLINGS ALONG THE YELLOWSTONE RIVER.

**Township\Range:**

001S025E

**Section:**

25

**TRS comments:**

1/22/2003

Montana Natural Heritage Program  
Species of Concern  
Shiloh Road Corridor Environmental Assessment

**Scientific Name:** HETERODON NASICUS

**Common Name:** WESTERN HOGNOSE SNAKE

**Forest Service Status:**

**Global Rank:** G5

**USFWS Endangered Species Act:**

**State Rank:** S3

**BLM Status:**

**Occurrence Type:**

**Species occurrence data:**

POPULATION REPORTED.

**Last observation:** 1909-08-07

**Size (acres):**

**General site description:**

**Land owner/manager:**

PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE); STATE TRUST LAND; BLM: BILLINGS FIELD OFFICE

**Comments:**

RECORD BASED ON MUSEUM SPECIMEN.

**Information source:**

ZOOLOGIST, MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVENUE, P.O. BOX 210800,  
HELENA, MT 59620-1800. 406/444-3009.

**Survey site name:** BILLINGS

**County:** YELLOWSTONE

**USGS quadrangle:** BILLINGS WEST

**Precision:** G

**Elevation (ft):** 3200

**Location:**

BILLINGS

**Township\Range:**

001S026E

**Section:**

4

**TRS comments:**

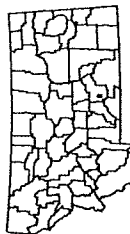
# Montana Species of Concern Shiloh Road Corridor Environmental Assessment

## Biological Data

- ▲ Animal
- Plant
- ⊕ Other
- Search Area

## Land Status

- BLM
- BOR (BuRec)
- CoE & other DoD
- NPS
- USFS
- Other USDA
- USFWS
- BIA Trust
- Tribal
- State Trust
- DFWP
- University & Institutions
- County & City
- Plum Creek
- Private Conservation
- Other private
- Water



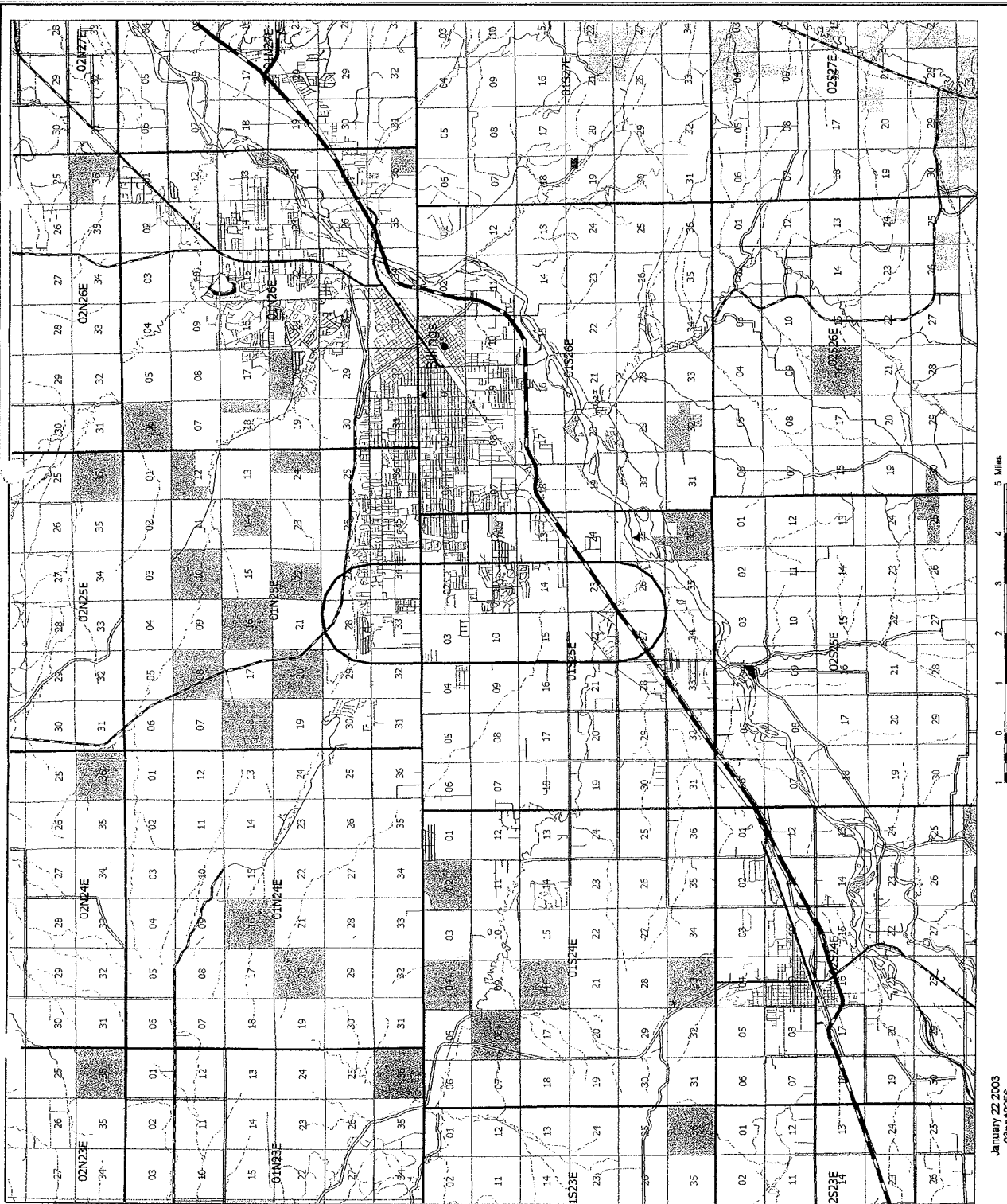
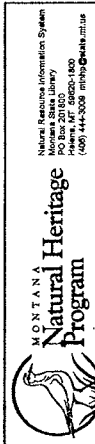
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Not all legend items may occur on map.

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This map displays management status, which may differ from ownership.

Refer to accompanying documentation for full explanation of map features.



January 22, 2003  
03prv0256



## **ENGINEERING, INC.**

Consulting Engineers and Land Surveyors

November 10, 2005

Mr. Fred Bente  
Consultant Design  
Montana Department of Transportation  
P. O. Box 201001  
Helena MT 59620-1001

Reference: Shiloh Road Corridor  
STPU 1031 (2) Control No. 4666  
E.I. No. 01103

Dear Fred:

This memorandum has been prepared as agreed upon by those in attendance at the April 14, 2005, meeting (minutes attached) conducted in Billings at the Howard Johnson Hotel and Convention Center. Representatives from the City of Billings, Yellowstone County, FHWA, The Montana Department of Transportation (MDT), Engineering, Inc., and David Evans & Associates were present. This memorandum will present the following:

1. Background information on the flood of 1937.
2. Brief discussion of various hydrologic/hydraulic studies and analyses performed to date and their relation to the study performed for the Shiloh Road Project.
3. Results from conducting several interviews with individuals or groups who would have historical recollection of any significant storm events and any related damage to Shiloh Road, BBWA, and Hogans Slough and the surrounding area.
4. Results of Yellowstone County records search to determine if any maintenance has been required on Shiloh Road related to any flooding since the 1937 event occurred.
5. A discussion on how historical evidence does not support the hydrologic modeling results from this project and three other studies.
6. A brief discussion on City and County efforts to address West End flooding risks.
7. A discussion on the Shiloh Road Project approach.

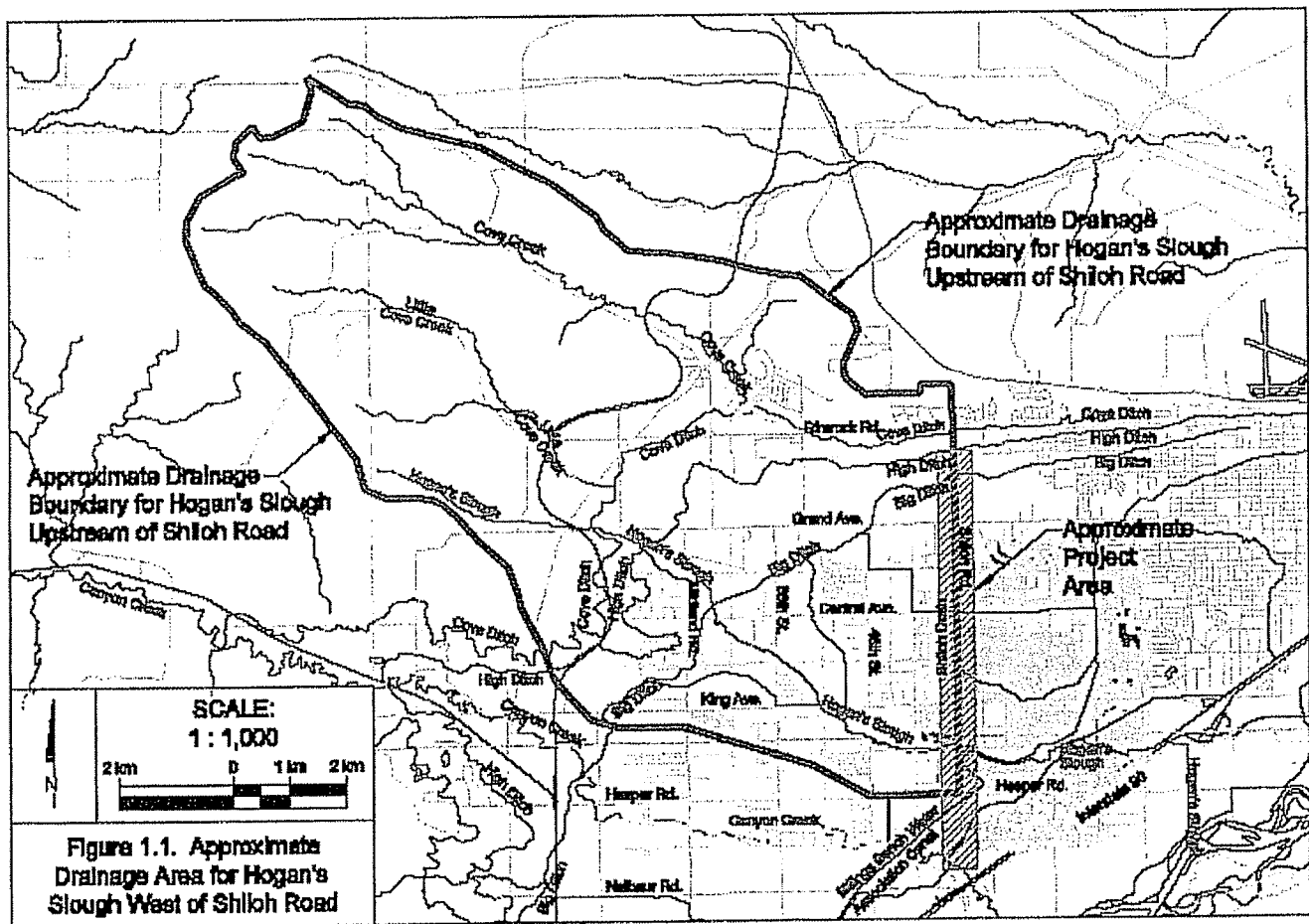
### **Background**

On June 11 and 12 in 1937, Billings experienced a catastrophic flood event. The Billings airport reported over one and one-half inches of precipitation in one hour, and it was estimated that rainfall amounts west of the airport were higher, with some residents reporting three to four inches of total precipitation. "The resulting runoff of water from the drainage area from which this storm occurred, was greater per square mile than the record of any previous storm which has occurred in Montana."<sup>1</sup> The storm was estimated to be a 500-yr to 1,000-yr storm event.

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<sup>1</sup> Corps of Engineers, March 1970. Yellowstone River and Tributaries. Billings, Montana, Flood Control Project,

Billings Bench Water Association (BBWA) Canal originates near the City of Laurel and is the largest irrigation supply ditch in Billings. BBWA crosses Shiloh Road near the Hesper Road intersection and then continues northerly along Shiloh Road to approximately midway between King Avenue and Hesper Road and then treks northeasterly through the Billings area (see Figure 1.1). Near this midpoint, a perennial stream, Hogans Slough, crosses Shiloh Road via a timber bridge structure and then crosses under BBWA via a 1,520 mm (60-inch) culvert. The Hogans Slough timber bridge has dimensions of 4.87 m long (measured parallel to Shiloh Road) x 2.68 m high (from channel invert) and the structure is 9.10 m in length (corresponds roughly to the asphalt surface width). A second 90 mm (36-inch) culvert is located approximately 30 m south and also passes under the BBWA Canal.



Hogans Slough is a perennial stream fed by irrigation and seepage flow. Hogans Slough drainage area encompasses a large area west and northwest of the Shiloh Road – Hogans Slough crossing. During the 1937 event, an estimated 5,800 cubic feet per second (cfs) of flow crossed Shiloh Road at the Hogans Slough crossing, then washed out 400 feet of the BBWA Canal and continued on a path towards Billings. Significant physical changes have occurred in the drainage area since the 1937 flood, which would alter

the effect of any flood event that might occur (roadways, land development, irrigation, bridge modifications, etc.)

Shiloh Road was constructed in 1956. Significant storm events have occurred since 1937, including large storm events in 1958, 1978, 1996, and 2001, among others, and Shiloh Road has not been determined to have overtopped since the 1937 storm.

### **Previous Studies and Analyses**

Ayres Associates was retained by Engineering, Inc. to complete a thorough hydraulic analysis of existing conditions along Hogans Slough to facilitate efforts for planned improvements associated with the Shiloh Road Corridor Project. The analysis was intended to support the Shiloh Road Corridor Environmental Assessment effort by providing adequate information to assess potential risks to the Shiloh Road facility and aid in any mitigation efforts associated with Hogans Slough and the Shiloh Drain.

Three previous studies provided background information for the current study:

1. The first is a report from the U.S. Army Corps of Engineers (USACE), Omaha District, dated March 1970. This report provides a valuable history of flooding along Hogans Slough and its impact on downtown Billings. It recognizes that Hogans Slough is not capable of conveying significant flood flows and that the Slough requires significant improvements and additional structures to avoid damaging flooding. The report recommends constructing a flood control berm upstream of and parallel to Shiloh Road to retain flows up to the 500-year discharge. It also outlines the creation of the Shiloh Drain, which was ultimately constructed approximately 3 to 5 m (10 to 16 feet) deep and 15 to 20 m (50 to 65 feet) wide at top, and carries groundwater, irrigation, and stormwater flows south along the west side of Shiloh Road from Broadwater Avenue approximately 2.9 kilometers to its confluence with Hogans Slough. Most of the combined flow from Shiloh Drain and Hogans Slough were predicted to then spill to the south into a proposed concrete-lined diversion channel that carries flood flows away from Shiloh Road and to Canyon Creek. The proposed channel had a 12-m (40-foot) bottom width and a flow depth of up to 4.6 m (15 feet). The flood control berm and concrete diversion ditch were never constructed, but the Shiloh Drain is currently in service. Furthermore, the alignment of the channel proposed by the USACE is no longer a viable alignment due to development that has occurred along Shiloh Road since 1970.
2. The Billings West End Storm Drainage Master Plan (WEMP) is the primary hydrologic reference used for the current Shiloh Road study, and was prepared in draft form by Engineering, Inc. in May 1991 for the City of Billings. Though never finalized, the WEMP has become the standard for stormwater planning and management for all portions of Billings west of Shiloh Road and much of the data utilized was obtained from the Army Corps study; as a result, the hydraulic and hydrologic modeling associated with the WEMP shows similar significant flooding risk along Hogans Slough at Shiloh Road under existing (1991) conditions, with more severe conditions following future development. The WEMP final design recommendation included green belts adjacent to the Hogans Slough to contain the entire flood flow up to the 100-year storm and prevent

ponding at road crossings. The WEMP also identified the need for a large detention facility on Hogans Slough at Shiloh Road, as well as a major diversion channel to Canyon Creek, as originally proposed by the USACE.

3. The final background report used for the current study was provided in draft form from HKM Engineering, Inc. in Billings (HKM 1996). This study focused on facility improvements on Hogans Slough from Shiloh Road to its confluence with the Yellowstone River. HKM identified hydraulic conditions from the USACE publication and the WEMP as the basis of its hydraulics and hydrology, and recommended sizing of new culverts and other features based on this published data. A key recommendation included the construction of the flood control berm and diversion channel between Hogans Slough and Canyon Creek. The following statement is a quote from the HKM report:

“Without the flood flow detention facility and flood flow diverter to Canyon Creek, structures along Hogans Slough are grossly inadequate to pass the 2-year storm flood under future conditions. Recommendations made herein are contingent upon the flood flow detention and diverter being constructed.” – HKM 1996, page 12.

The HKM report recommended allowing only 95 cfs of the future peak flow of 7,120 cfs through the flood control berm at Shiloh Road. This was based on the assumption that the Bannister Drain downstream of the BBWA would convey an additional 405 cfs of flow for a combined total of 500 cfs in lower Hogans Slough. The flow limitation of 95 cfs crossing Shiloh Road, as identified in the HKM report, is assumed as the primary design criteria for the current study.

### **Current Hydraulic Analysis**

Three storms were analyzed in the current hydraulic study, including the 2-, 10-, and 100-year storm events. A 1-dimensional hydraulic model was created using HEC-RAS to simulate the dynamic condition of a 24-hour storm on Hogans Slough, including the rapid rise of peak flow in the channel, and the steady fall back to base flow conditions. With HEC-RAS, it was possible to determine how much flood storage was available from topographic features, how much road overtopping would occur at various locations, and how much flow would have to be detained to limit outflow at the BBWA Canal to 95 cfs. Existing flooding conditions were developed as a baseline for comparison with proposed improvements.

The HEC-RAS model extends from Central Avenue to just downstream of the BBWA Canal, and includes three culvert crossings and two bridges under four roads and one canal. Future conditions hydrology, assuming full development west of Shiloh Road, was obtained from the WEMP as boundary conditions for the HEC-RAS model. Channel topography was obtained from channel cross-section surveys conducted by Engineering, Inc., and overbank topography was estimated from USGS quadrangle maps, with 10-foot contour intervals, dating back to 1989. Supplemental point elevations were also obtained along some of the overbank areas.

Results of the modeling efforts indicate that there is significant overtopping of Shiloh Road under all storm conditions. For existing conditions, the estimated overtopping depths are 0.5 foot for the 2-year

storm, 2.4 feet for the 10-year storm, and almost 2.8 feet for the 100-year storm event. Under future developed conditions (as defined by the WEMP 1991), the additional runoff generated by increased impervious area associated with future development raises the Shiloh Road overtopping depth up to 1.8 feet in the 2-year storm, 2.5 feet in the 10-year storm, and 3.8 feet in the 100-year storm. As noted by this and previous studies, any overtopping of Shiloh Road may contribute to significant flooding within the city limits east of Shiloh Road.

In the process of presenting the results of the current and previous studies, several individuals have expressed concerns regarding the magnitude of the estimated flood discharges. Most feel that the estimates are too high and overly conservative. The last recorded storm event that created overtopping flows at Shiloh Road occurred in 1937 according to the USACE document.

### **Historical Research**

Of the parties involved in this project and discussions with other long-time Billings' residents, none can recall any storms since 1937 that have caused overtopping of Shiloh Road. The hydrologic and hydraulic analyses performed for the Shiloh Road project produced similar results to the previous studies that have been performed. Essentially the same baseline data was utilized in this project as with the others. Although there were three studies that all produced results that there is a significant flood risk to Shiloh Road in the vicinity of the Hogans Slough crossing, it has become apparent that the data utilized in the analyses must be somehow flawed. Engineering, Inc. performed a significant amount of research to determine if Shiloh Road has been overtopped with stormwater since the 1937 flood event.

### **Interviews**

#### **Billings Bench Water Association (BBWA)**

BBWA superintendent, Glen Downer, was contacted July 19, 2005, to determine if he was aware of any maintenance required on the BBWA Canal since the 1937 flood, when a substantial portion of the canal was washed away where Hogans Slough intersects it. He indicated that the only maintenance he is aware of is limited to routine cleaning of the culvert openings associated with Hogans Slough under the BBWA, which occasionally becomes obstructed with various debris, causing water to back up but not flood the area between Shiloh Road and the BBWA. The conversation record is attached for reference.

#### **Long-time resident**

Jerry Walter is a landowner and farmer residing immediately downgradient of the Hogans Slough crossing under the Billings Bench Water Association (BBWA) Canal. Jerry was contacted and agreed to a phone interview on June 9, 2005. Jerry does not recall a single incident since the 1937 flood where Shiloh Road was, itself, overtopped by floodwaters. There have been incidences where Hogans Slough has flooded his property and he recalls events where water backed up above the BBWA crossing. The conversation record is attached for reference.

#### **Adjacent Landowners**

Joel Long and Mac Long are father and son, respectively, and are property owners along Shiloh Road adjacent to the Hogans Slough crossing of Shiloh Road. Joel was involved with the original construction of Shiloh Road in 1955. In addition, he was the founder of JTL Group, which is the large gravel mining, concrete production, and asphalt production plant located adjacent to the Shiloh Road – Hogans Slough



Mr. Fred Bente  
November 10, 2005  
Page 6

crossing. In a person-to-person meeting conducted June 6, 2005, Joel was not aware of any flood that has overtopped Shiloh Road since 1937. The 1937 flood event is the only event he could recollect where such an event occurred. The conversation record is attached for reference.

#### Yellowstone County Maintenance Records

Yellowstone County was asked to research maintenance records to determine if any county maintenance was required on Shiloh Road as a result of inundation or flooding associated with Hogans Slough. The Director of Public Works (Bob Moats) for Yellowstone County provided a response indicating they did not have records of flooding since the 1937 flooding event. The correspondence is attached for reference.

#### Summary of Findings

Regional topography within the Hogans Slough watershed has been significantly modified since 1937 through the construction of numerous roadways, irrigation features, land development, and agricultural operations. Shiloh Road was elevated from its original roadway surface during its 1956 construction. Given these changes and since there have been significant recorded storms since 1937 with no records found of overtopping of Shiloh Road, it is not likely that Shiloh Road would overtop as a result of precipitation events, except possibly during extremely rare events or circumstances.

Topographic mapping and hydrologic analyses that were performed for the various previous studies were for the entire Hogans Slough drainage from its headwaters to the Yellowstone River. The purpose of these studies was to aid the city and county in their planning efforts for future development and not specifically for the Shiloh Road project. It was agreed by participants at the April 14, 2005, project meeting that performing a new study/analysis was not within the scope of this project, as it is not needed for the design of a new structure over Hogans Slough and due to the extensive cost and time requirements necessary to complete such a study/analysis.

#### City of Billings/Yellowstone County Activities

##### *Proposed West Billings Flood Hazard Assessment*

In August 2005, the City-County Planning Department in Billings issued a request for proposals, entitled "West Billings Flood Hazard Assessment" to "identify the 100-year floodplain and floodways in the West Billings area including the drainages of Cove Creek (from Rimrock Road south), Little Cove Creek, and Hogans Slough. The activities would include detailed topographic mapping, hydrologic analysis, hydraulic analysis and mapping floodways and the 100-year floodplain in accordance with FEMA Guidelines." Further, the 10-, 50-, 100- and 500-year storm event peak discharges will be calculated and the 1- and 0.2-percent-annual-chance (100- and 500-year) floodplain boundaries and regulatory floodway boundaries (if required) for the flooding sources analyzed.

#### Shiloh Drain Dissolution

The City of Billings is currently in the process of acquiring the Shiloh Drain from the Shiloh Drain District. The district dissolution is anticipated to be completed in the 2005/2006 winter months. The City WEMP planned to utilize the Shiloh Drain for stormwater discharge. The City is currently analyzing the capacity of the Shiloh Drain for detention of stormwater. The Shiloh Drain has an enormous capacity for detaining stormwater with a gradual release into the Hogans Slough for further conveyance. The Shiloh Road project will utilize the Shiloh Drain for its stormwater discharge also.

Mr. Fred Bente  
November 10, 2005  
Page 7

*Sharptail Park*

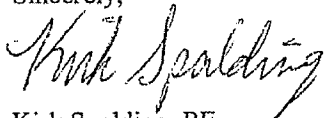
Yellowstone County owns an approximately 76-acre parcel located at the confluence of the Shiloh Drain and Hogans Slough. The parcel was master-planned for a regional detention facility and public park. Discussions have been underway recently between Yellowstone County and JTL Group for the potential construction of this facility.

**Shiloh Road Approach to Hogans Slough Flood Risk**

After substantial discussion at the April 14, 2005, meeting discussed earlier, it was decided by those present that the Shiloh Road project should construct Shiloh Road to eliminate a net effect to the existing flooding risks associated with the Hogans Slough crossing under Shiloh Road. Historical data does not support the conclusions of the various hydrologic and hydraulic studies that have been performed to date by various entities, and no evidence of overtopping of Shiloh Road has been determined since the 1937 flood event. To eliminate a net effect, and if a preferred 'build' alternative is selected, Shiloh Road will be improved utilizing the existing vertical road profile in the vicinity of the Hogans Slough intersection with Shiloh Road. The timber bridge structure would likely be replaced during construction of the approved Shiloh Road improvements. The hydraulic capacity of the new structure will match that of the existing structure to the maximum extent feasible; the intent of this effort is to eliminate any net change from existing conditions.

If you have any questions or desire additional information, do not hesitate to call me at 406/656-5255.

Sincerely,



Kirk Spalding, PE  
Project Manager

/dml  
encls

c: Bruce Barrett, MDT District 5 Administrator  
Fred Bente, Consultant Project Supervisor, MDT  
Mark Goodman, Hydraulics, MDT  
Jean Riley, Environmental Bureau Chief, MDT  
Alan Woodmansey, FHWA, Billings  
John Ostlund, County Commissioner, Yellowstone County  
Dave Mumford, Public Works Director, City of Billings

## Kirk Spalding

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**From:** Bob Moats [bmoats@co yellowstone mt.us]  
**Sent:** Friday, July 08, 2005 9:19 AM  
**To:** Kirk Spalding  
**Cc:** Tim Miller; Mike Black  
**Subject:** RE: Shiloh Road - County Maintenance records with respect to Hogan's Slough flooding records (see attached letter)

Kirk

I thought we spoke about this over the phone recently. I was not aware that you needed a written response. If you need something other than this e-mail reply, would you let me know?

As you may know, I have worked for the County for the past 31 years. From my recollection and in speaking with others who have worked with for the County, we are unaware of water overtopping Shiloh Road at the Hogan Slough. Further, we researched our records and find no data, or complaints, relating to water overtopping Shiloh Road in this area.

Thank you for your efforts in this project. Should you need additional information, or have further questions, feel free to contact me.

## *Bob Moats*

Road & Bridge Director  
phone (406) 256-2735  
fax (406) 254-7946

-----Original Message-----

**From:** Kirk Spalding [mailto:kspalding@enginc.com]  
**Sent:** Thursday, July 07, 2005 2:30 PM  
**To:** Bob Moats  
**Cc:** Mike Black  
**Subject:** Shiloh Road - County Maintenance records with respect to Hogan's Slough flooding records (see attached letter)

Hi Bob,

Did you get the attached letter and has any work begun in preparing a response? Our environmental sub is pestering me for it, since I had put a July 1 request date on it. I just need a response to provide them on when they can expect a copy of the County's response.

Thanks again.  
Kirk

**KIRK SPALDING, P.E.**  
Engineering, Inc.  
1300 North Transtech Way  
Billings, Montana 59102  
phone: (406) 656-5255  
fax: (406) 656-0967

11/10/2005

B-60

## Kirk Spalding

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**From:** Kirk Spalding  
**Sent:** Tuesday, July 19, 2005 9:52 AM  
**To:** 'Debra Perkins-Smith'  
**Subject:** Shiloh Road - 7-19-05 discussion with BBWA Superintendent

I spoke with BBWA this morning. They forwarded me to Glen Downer (cell # 325-2168; office 259-6241), who is the Superintendent for BBWA.

Glen said he has not seen nor does he have any recollection of any significant problems or large maintenance issues associated with the BBWA Canal or Hogan's Slough between Shiloh Road and the canal. Occasionally, they have to go in and remove posts and other debris that block the entrance to the Hogan's Slough culvert that passes under BBWA. These blockages have a tendency to cause water to back up behind (west) the BBWA. He is not aware of stormwater overtopping Shiloh Road either, but has seen water back up into the area west of Shiloh Road and up into the Shiloh Drain channel. The only maintenance he mentioned that he is aware of that has occurred since the 1937 flood is associated with routine maintenance: cleaning the culvert entrance, removing sediment from the Slough between Shiloh Road and BBWA, installing a diversion check dam and revising channel geometry of the irrigation ditch lateral (small channel between Shiloh Road and the BBWA) are among the maintenance items he mentioned.

Kirk

**KIRK SPALDING, P.E.**  
Engineering, Inc  
1300 North Transtech Way  
Billings, Montana 59102  
phone: (406) 656-5255  
fax: (406) 656-0967

7/25/2005

B-61

**ENGINEERING, INC.**  
**Telephone Conversation Record**

Project Name: Shiloh Road Corridor

Project No.: 01103

Date: 6/9/05

To: Jerry Walter

Time: 2 pm a.m. (p.m.)

From: Kirk Spalding

Phone No.: (406) 651-9077

Subject:

I asked Jerry if he recalled any flooding of Shiloh Road at what Hogans Slough crosses. He said he's never seen Shiloh flood. His dad recalled the 1937 flood. His neighbor has told him that "most of the bridges in the 'west-end' of Billings. The old flume near the Zoo that crosses over Canyon Creek was washed away."

Jerry mentioned a large "cloudburst" in 1976 to 1978 (wasn't sure of precise year) in which Hogans Slough overtopped its banks near his house but that Shiloh Road did not flood. Water backed up pretty close to Shiloh Road but not onto the roadway. Only lines on the downstream end of the Hogans Slough crossing under BBWA. The slough has less capacity than what can get under BBWA, so it can flood.

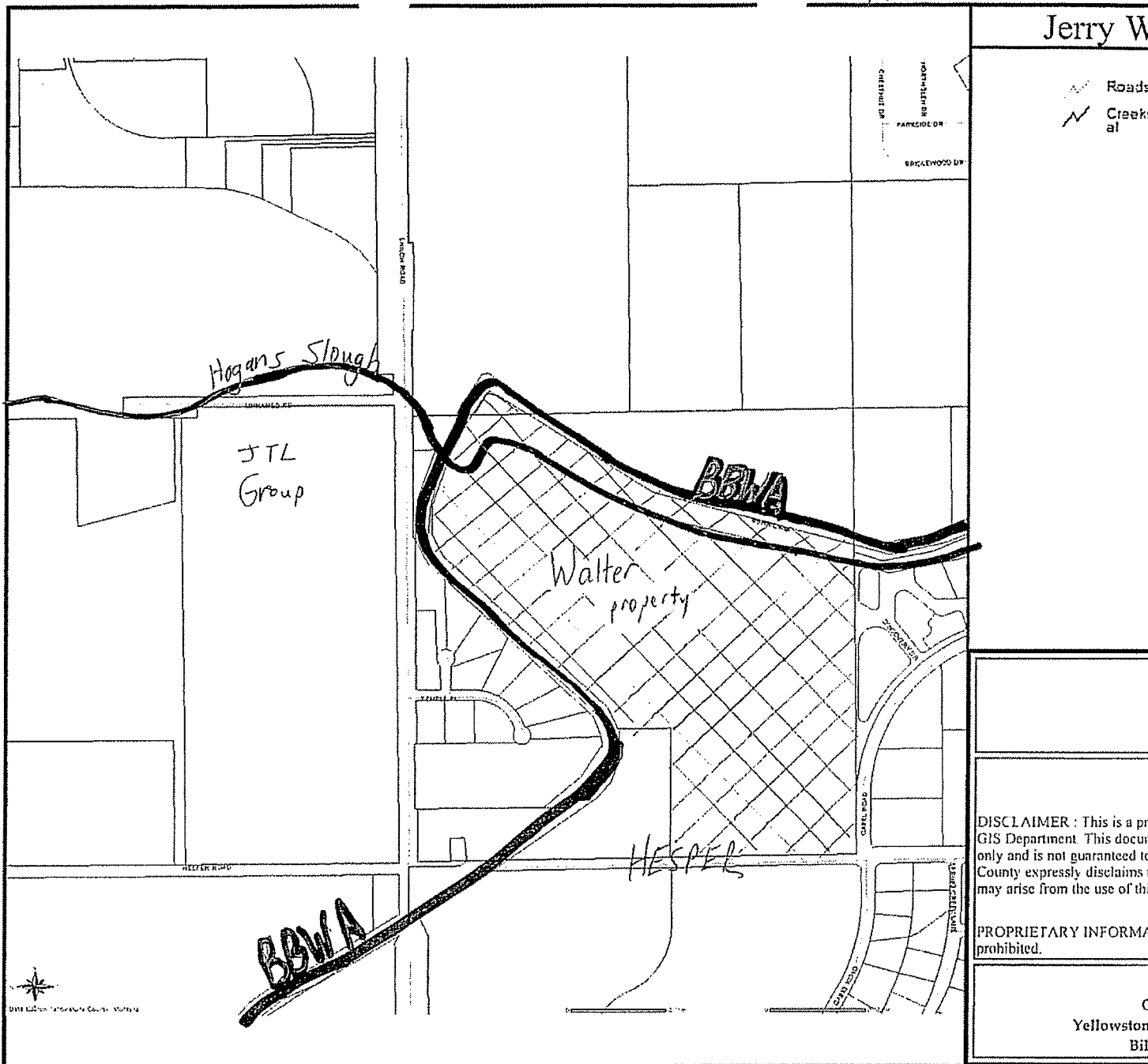
Jerry has seen R.R. ties 4"x4"'s, and even a deer wash under BBWA through the culverts.

Comments:

Employee signature: Kirk Spalding

stories of the 37 flood

Jerry W





# Yellowstone County, Montana

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**Disclaimer:** Not all fields are currently maintained. The accuracy of the data is not guaranteed. Please notify the Appraisal/Assessment Office of any inaccuracies.

[Close Window](#)

[Full Cama Detail](#)

## Owner Information

Tax ID: D00609 Tax Status: Active  
 Legal Owner Name: WALTER, JERRY TRUSTEE  
 Co-Owner Name: JAMES A WALTER FAMILY TRUST (78.04%)  
 Additional Owner Name: YOST, DORIS L (10.98%)  
 Additional Owner Name: WALTER, DONALD L (10.98%)  
 Mailing Address: WALTER, JERRY TRUSTEE  
 3815 HESPER RD  
 BILLINGS, MT 59102  
 Property Address: HESPER RD  
 Township: 01.0S Range: 25.0E Section: 14  
 Full Legal: ALL UNPLATTED LAND IN SW4  
 GeoCode: 03-0926-14-3-05-01-0000

## Property Assessment Information

Levy District: BILLINGS OUTSIDE  
 Assessed value (Base date 1/1/2002)  
 Assessed Land Value = \$ 39,039.00  
 Assessed Building(s) Value = \$ 17,280.00  
 Total Assessed Value = \$ 56,319.00

## Taxable Market Value\*

Tax Year: 2004

Class Code	Amount
1 ACRE FARMSTEAD - AG = \$	592.00
GRAZING LAND = \$	12,373.00
IMPS ON AG LAND = \$	9,488.00
TILLABLE IRRIGATED LAND = \$	19,928.00
Total = \$	42,381.00

\* The values shown are for the given tax year as supplied by the Department of Revenue. This value is used to calculate the property tax and is not the true market value of the property. The most recent market value is not allowed to be used by the Legislature. For questions regarding how the taxable market value is derived, please contact the Montana Department of Revenue, Appraisal/Assessment Office at [406-896-4000](tel:406-896-4000).

## SID/RSID Information

No City or Rural SID For D00609

## Property Tax Billing History

Year	1st Half	2nd Half	Total
<u>2000</u>	273.44 P	273.43 P	546.87
<u>2001</u>	274.50 P	274.48 P	548.98
<u>2002</u>	327.66 P	327.63 P	655.29
<u>2003</u>	340.18 P	340.16 P	680.34
<u>2004</u>	340.11 P	340.08 P	680.19

(P) indicates paid taxes.

Click on year for detail.

## Jurisdictional Information

APPENDIX E - Contact Form

Shiloh Road EA - STPU 1013(2) CN 4666

Date: June 6, 2005

Staff: Kirk Spalding

Source: Person-to-Person interview

Parties

Involved: Joel Long, Mac Long, Kirk Spalding, Bruce Barrett, Michael Sanderson, Bob Sanderson

Topic: Historical Flooding of Shiloh Road

Comments: Asked Joel if he has ever seen Shiloh Road under water from flooding, especially near Hogan's Slough. His response was "no". He participated in the original construction of Shiloh Road in 1955 and 1956 and does not recall any roadway flooding since then, or before, with the exception of the 1937 flood.

Action: None

Date Due: None

Party Responsible

For Action: None

Please submit to: Laura Meyer at llhu@deainc.com or fax to 720-946-0973





## Appendix C      Farmland Conversion Impact Rating





DAVID EVANS  
AND ASSOCIATES INC.

August 21, 2006

Ms. Valerie Robertson  
USDA - Natural Resource Conservation Service  
Billings Field Office  
1629 Ave. D Building A Suite 4  
Billings, MT 59102

**SUBJECT: SHILOH ROAD ENVIRONMENTAL ASSESSMENT**  
**STPU 1031(2) CN 4666**  
**USDA NRCS-CPA-106 Farmland Conversion Impact Rating Form**

Dear Ms. Robertson:

As you may recall, the USDA NRCS CPA-106 and supporting documentation containing data prepared for the referenced project was originally sent to you on January 27, 2006. Since that time, the build alternatives for the Shiloh Road Corridor Draft Environmental Assessment (EA) have been altered to an extent which requires resubmission of the form and documentation. Please find the enclosed *updated* USDA NRCS CPA-106, along with supporting documentation. Engineering, Inc. is managing the project for the Montana Department of Transportation (MDT). David Evans and Associates, Inc. is a sub-consultant to Engineering Inc. We will be coordinating the completion of the USDA NRCS CPA-106 Form through the Billings Field Office, as indicated in a February 23, 2005 correspondence from your office to Kirk Spalding at Engineering, Inc.

The Shiloh Road corridor study area begins at the Canyon Creek Bridge (RP 4.75) and extends north on Shiloh Road to Poly Drive (RP 0.25). The proposed project is a reconstruction of Shiloh Road including widening and intersection improvements. In the previously submitted CPA-106 form, four build alternatives were presented. Under those alternatives, there were two typical roadway sections and two intersection types. Four revised build alternatives were developed in response to analysis of updated traffic projections and new development plans that have been identified since the initiation of the project. The four revised build alternatives that will be presented in the Draft EA and are included here are within the existing corridor and follow the same alignment and all have an urban typical section, but have different numbers and types of intersection improvements. The intersection alternatives include signalized intersections and roundabout intersections. The first two build alternatives propose intersection control at seven locations corresponding with arterial street crossings. The other two build alternatives propose intersection control at eleven locations including the same seven arterial street crossings plus four additional locations where major development is proposed. The revised four build alternatives that will be presented in the Draft EA and are included on the impact rating form include:

**Shiloh Road Corridor Alternatives – NRCS-CPA-106 Form**

Corridor A – Traffic Signals at Arterials (seven traffic signals)

Corridor B – Roundabouts at Arterials (seven roundabouts)

Corridor C – Traffic Signals at Arterials and Major Development (eleven traffic signals)



#### Corridor D – Roundabouts at Arterials and Major Development (eleven roundabouts)

It should be noted that this project also includes the construction of a multi-use path that would likely be maintained by the City of Billings. This path is proposed to parallel Shiloh Road from the entrance of ZooMontana (near the southern project limit) to Poly Drive (at the northern project limit). Between ZooMontana and Colton Boulevard, the path would parallel Shiloh Road on the west side and from Colton Boulevard to Poly Drive, the path would parallel Shiloh Road on the east side.

In two locations in the corridor (the southern end and the northern end), the multi-use path would be located in the proposed MDT right-of-way for Shiloh Road. Therefore, the calculated impacts presented here include the impacts for the roadway and the multi-use path in those two locations.

For most of the corridor, the path lies outside of the existing or proposed MDT right-of-way and therefore, is not included in this analysis. From just south of King Avenue (at Montana Sapphire Drive) to Broadwater Avenue, it is likely that the multi-use path will not be in MDT right-of-way because the Shiloh Drain would separate the multi-use path from the roadway for most of this segment. The City has recently acquired the Shiloh Drain. The additional area for the multi-use path between Montana Sapphire Drive and Broadwater Avenue would amount to approximately 2.1 acres of land, some of which is designated as important farmland.

I have provided hard copy documentation, as well as supporting Geographic Information System (GIS) digital data for use in your review of this project. A description of supporting documentation follows:

Documentation	Description
<i>NRCS-CPA-106 Form</i>	NRCS-CPA-106 Form for Shiloh Road project corridor including ratings for four site alternatives
<i>Detailed Assessment</i>	A detailed account of analysis performed to obtain ratings related to NRCS-CPA-106
<i>GIS Digital Data</i>	
ExistingROW.shp	Existing right-of-way for Shiloh Road Corridor
nonurban.shp	Non-urban areas within 1-mile radius of project corridor
projectarea_farmlands.shp	Farmed areas adjacent to proposed project corridor
irrigated_parcel	Irrigated parcels in Yellowstone County
farm_primeIrrigated.shp	Prime if Irrigated Farmland in Yellowstone County
farm_primeANDirrigated.shp	Prime Farmland that is irrigated in Yellowstone County
farm_statewideimp.shp	Farmland of Statewide Importance in Yellowstone County
<i>Farmland Impact GIS Digital Data (for Alternatives A, B, C, and D)</i>	
AltX_ProjectArea.shp	Project area for corridor alternative (based on proposed right-of-way)
AltX_nonurban.shp	Portions of project area adjacent to non-urban areas
AltX_FarmlandImpacts.shp	Farmland impacts for corridor alternative, including Prime (Irrigated) Farmland and Farmland of Statewide Importance

Ms. Valerie Robertson  
Page 3



Please feel free to contact me at (720) 946-0969 if you have any questions or concerns about this information.  
Thank you for your time and assistance.

Sincerely,

**DAVID EVANS AND ASSOCIATES, INC.**

A handwritten signature in cursive script that reads 'Debra Perkins-Smith'.

Debra Perkins-Smith, AICP, DEA  
Vice-President

Copies: Kirk Spalding, Engineering, Inc.  
Tom Martin, MDT  
File

Attachments/Enclosures: NRCS-USDA-CPA-106 Farmland Conversion Impact Rating  
Supporting documentation for calculations  
CD with supporting data

Initials: KAS  
File Name: P:\ENGN0000-0001 Shiloh Rd\Admin\Correspondence\Letters\Agency Letters\CPA106\_coverletter.doc  
Project Number: STPU 1031(2) CN 4666

# FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

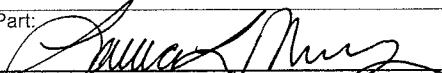
<b>PART I (To be completed by Federal Agency)</b>		3. Date of Land Evaluation Request	4. Sheet 1 of <u>1</u>
1. Name of Project <b>Shiloh Road Corridor EA</b>		5. Federal Agency Involved <b>Montana State Department of Transportation</b>	
2. Type of Project <b>Transportation Corridor</b>		6. County and State <b>Yellowstone County, MT</b>	
<b>PART II (To be completed by NRCS)</b>		1. Date Request Received by NRCS <b>10/5/06</b>	2. Person Completing Form <b>Valerie Robertson</b>
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated <b>6</b> Average Farm Size <b>1226</b>	
5. Major Crop(s) <b>Sugar beets, Corn, Barley, Alfalfa</b>	6. Farmable Land in Government Jurisdiction Acres: <b>466412</b> %		7. Amount of Farmland As Defined in FPPA Acres: <b>12</b> %
8. Name Of Land Evaluation System Used <b>National LESA</b>	9. Name of Local Site Assessment System <b>N/A</b>		10. Date Land Evaluation Returned by NRCS <b>10/5/06</b>

<b>PART III (To be completed by Federal Agency)</b>	<b>Alternative Corridor For Segment</b>			
	<b>Corridor A</b>	<b>Corridor B</b>	<b>Corridor C</b>	<b>Corridor D</b>
A. Total Acres To Be Converted Directly	<b>8</b>	<b>7</b>	<b>8</b>	<b>8</b>
B. Total Acres To Be Converted Indirectly, Or To Receive Services				
C. Total Acres In Corridor	<b>8</b>	<b>7</b>	<b>8</b>	<b>8</b>
<b>PART IV (To be completed by NRCS) Land Evaluation Information</b>				
A. Total Acres Prime And Unique Farmland	<b>3</b>	<b>4</b>	<b>5</b>	<b>4</b>
B. Total Acres Statewide And Local Important Farmland	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	<b>47</b>	<b>47</b>	<b>45</b>	<b>45</b>
<b>PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)</b>	<b>66</b>	<b>66</b>	<b>63</b>	<b>63</b>
<b>PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))</b>	<b>Maximum Points</b>			
1. Area in Nonurban Use	15	<b>10</b>	<b>10</b>	<b>10</b>
2. Perimeter in Nonurban Use	10	<b>7</b>	<b>8</b>	<b>8</b>
3. Percent Of Corridor Being Farmed	20	<b>6</b>	<b>6</b>	<b>6</b>
4. Protection Provided By State And Local Government	20	<b>0</b>	<b>0</b>	<b>0</b>
5. Size of Present Farm Unit Compared To Average	10	<b>0</b>	<b>0</b>	<b>0</b>
6. Creation Of Nonfarmable Farmland	25	<b>0</b>	<b>0</b>	<b>0</b>
7. Availability Of Farm Support Services	5	<b>5</b>	<b>5</b>	<b>5</b>
8. On-Farm Investments	20	<b>0</b>	<b>0</b>	<b>0</b>
9. Effects Of Conversion On Farm Support Services	25	<b>0</b>	<b>0</b>	<b>0</b>
10. Compatibility With Existing Agricultural Use	10	<b>0</b>	<b>0</b>	<b>0</b>
<b>TOTAL CORRIDOR ASSESSMENT POINTS</b>	<b>160</b>	<b>28</b>	<b>29</b>	<b>29</b>
<b>PART VII (To be completed by Federal Agency)</b>				
Relative Value Of Farmland (From Part V)	100	<b>66</b>	<b>66</b>	<b>63</b>
Total Corridor Assessment (From Part VI above or a local site assessment)	160	<b>28</b>	<b>29</b>	<b>29</b>
<b>TOTAL POINTS (Total of above 2 lines)</b>	<b>260</b>	<b>94</b>	<b>95</b>	<b>92</b>

1. Corridor Selected: <b>Roundabouts at Arterials and at JTL/County Road access (8 Roundabouts). Impacts are identical to those listed here for Corridor B.</b>	2. Total Acres of Farmlands to be Converted by Project: <b>7.33 ac</b>	3. Date Of Selection: <b>09/06</b>	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
--------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------	---------------------------------------	-------------------------------------------------------------------------------------------------------------

5. Reason For Selection:

Roundabouts at intersections are preferred over traffic signals because roundabouts would provide a slightly better LOS and travel time, would potentially provide a greater reduction in accident rates, and would require slightly less corridor right-of-way. To promote through mobility within the Shiloh Road Corridor, full access was limited to arterials as shown in the Roundabouts at Arterials Alternative. The JTL/County Road access was also included for safety reasons and because it meets the one-half mile spacing typical of arterials. A full access intersection with intersection control (roundabout) at this location allows the long gravel trucks to safely enter onto Shiloh Road, improving safety for all drivers on Shiloh Road.

Signature of Person Completing this Part:  DATE **11/11/06**

NOTE: Complete a form for each segment with more than one Alternate Corridor

## CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

- (1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent - 15 points  
 90 to 20 percent - 14 to 1 point(s)  
 Less than 20 percent - 0 points

- (2) How much of the perimeter of the site borders on land in nonurban use?

More than 90 percent - 10 points  
 90 to 20 percent - 9 to 1 point(s)  
 Less than 20 percent - 0 points

- (3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points  
 90 to 20 percent - 19 to 1 point(s)  
 Less than 20 percent - 0 points

- (4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected - 20 points  
 Site is not protected - 0 points

- (5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?

(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.)

As large or larger - 10 points  
 Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

- (6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points  
 Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)  
 Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

- (7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available - 5 points  
 Some required services are available - 4 to 1 point(s)  
 No required services are available - 0 points

- (8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment - 20 points  
 Moderate amount of on-farm investment - 19 to 1 point(s)  
 No on-farm investment - 0 points

- (9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted - 25 points  
 Some reduction in demand for support services if the site is converted - 1 to 24 point(s)  
 No significant reduction in demand for support services if the site is converted - 0 points

- (10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points  
 Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)  
 Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points



## NRCS-CPA106 Corridor-Type Assessment Criteria Detailed Assessment

Alternative A = Traffic Signals at Arterials (seven traffic signals)

Alternative B = Roundabouts at Arterials (seven roundabouts)

Alternative C = Traffic Signals at Arterials and Major Development (eleven traffic signals)

Alternative D = Roundabouts at Arterials and Major Development (eleven roundabouts)

- 1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?

Alternative	Total Area within 1-mile radius of project area (ac)	Nonurban area within 1-mile radius (ac)	% of Area that is nonurban
A,B,C,D	8884.89	6024.27	67.80%

**65% to 69% is assigned 10 points**

- 2) How much of the perimeter of the site borders on land in nonurban use?

Alternative	Total perimeter (ft)	Perimeter bordering nonurban land (ft)	% of perimeter bordering nonurban land
A	106757.87	78006.00	73.07%
B	90402.95	68549.11	75.83%
C	104376.15	76134.38	72.94%
D	90192.32	68771.82	76.25%

**65% to 73% is assigned 7 points and 74% to 81% is assigned 8 points**

- 3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

Alternative	Total area of project area (ac)	Total farmed area (ac)	% of the site farmed
A	28.61	10.59	37.02%
B	25.15	9.41	37.42%
C	28.46	10.62	37.32%
D	26.24	9.82	37.42%

**35% to 37% is assigned 6 points**

- 4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Per conversation with Valerie Robertson, Yellowstone County NRCS, on October 21, 2005, the site is not covered by any local government policies or programs, or private programs designed to protect farmland. **A point value of 0 is assigned.**

- 5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County?

Alternative	Average size farm in County (ac)	Average impacted farm size (ac)	% of average-size farm in the County
A,B,C,D	1226.00	28.69	2.34%

**50% or below county average is assigned 0 points**

- 6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

If any of the four sites are chose, the rest off the agricultural land not including the site will remain farmable. **Therefore, a point value of 0 (for 5% or less) is assigned.**

- 7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

Per conversation with Valerie Robertson, Yellowstone County NRCS, all required services are available to farmers on the site. **A point value of 5 (for 100% of services available) is assigned.**

- 8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

From aerial photo observation, no substantial farm investments or agricultural facilities exist on the proposed sites. **A point value of 0 (for 0 to 4% of on-farm investment) is assigned.**

- 9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

There would be no significant reduction in demand for support services if the site is converted and the viability of the remaining farms in the area would not be threatened. **A point value of 0 is assigned.**

- 10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

The existing roadway, which the proposed project would expand, has been entirely compatible with agricultural uses. The proposed project would continue to be fully compatible with agricultural uses and would not contribute to the eventual conversion of the surrounding farmland to nonagricultural uses. **A point value of 0 is assigned.**

## **Shiloh Road Environmental Assessment Form CPA106 Methodology**

### **A. Urban/Non-urban Areas**

1. Downloaded urban areas (based on census data) from Montana GIS website
2. Compared census urban areas with DOQs and aerial photography and changed urban areas accordingly.
3. Created 1-mile radius from the project corridor and calculated the total urban area and total non-urban area in the 1-mile radius.

### **B. Prime and Statewide Importance Farmland Classification**

1. Downloaded soil classification data and irrigated lands from the Montana GIS website.
2. Classified soils as "prime if irrigated" and "of statewide importance" using Yellowstone County Soils Report (1/27/2003).
3. Overlaid "prime if irrigated farmland" and irrigated parcels to determine which farmlands were in fact irrigated.
4. Created new layer to show prime AND irrigated farmland.

### **C. Availability of Farm Support Services**

All required services are available (per Valerie Robertson, 10/21/2005).

### **D. Protection Provided by State and Local Governments**

Site is not protected (per Valerie Robertson, 10/21/2005).

### **E. Average farm unit size in County**

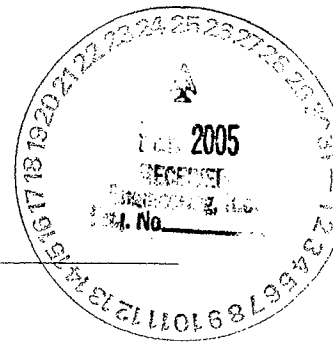
Found on USDA Census of Agriculture data

### **F. Total acreage of the areas that have been farmed more than five of the last 10 years**

Current farmland represents farming activity for the last five years (as Per Valerie Robertson, 10/25/2005). Farmed land was determined using Montana State parcel data.



Natural Resources Conservation Service  
1629 Ave. D Building A Suite 4  
Billings, MT 59102



February 23, 2005

Engineering Inc  
1260 South 32<sup>nd</sup> Street West  
Billings, MT 59102

Dear Mr. Spalding:

Thank you for your letter of January 19, 2005 requesting information concerning the occurrence of important farmland in regard to the Shiloh Road Corridor Project. I have enclosed a map of the area with the prime and important soils labeled and a list of the Yellowstone County soils farmland classifications. The map shows the extension as well as the original project as discussed in the previous letter.

As you may be aware, the provisions of the federal Farmland Protection Policy Act (FPPA), require evaluation of important farmland status (prime farmland, farmland of statewide importance, or locally important farmland), when the actions or assistance of a federal agency irreversibly converts (directly or indirectly) farmland. This information and the resulting evaluation should be included in the resource analysis as part of the Environmental Impact Statement for the project alternatives analysis

Because it appears that there are prime and important soils within the project scope of the original project and the extension, the form AD-1006 will need to be completed and returned to the NRCS office.

Should you have any questions concerning this information, please do not hesitate to give me a call at 657-6135 ext. 115. Shad Weber is no longer located in this office, so I will be the new contact for any future projects.

Sincerely,

A handwritten signature in cursive script that reads "Valerie Robertson".

Valerie Robertson  
District Conservationist  
USDA/NRCS

Enclosure

Note: Yellowstone County soils farmland classifications are available from the Montana Department of Transportation.

## United States Department of Agriculture



1629 Avenue D, Building A, Suite 4  
Billings, Montana 59102 Phone (406) 657-6135

February 14, 2003

Engineering Inc.  
1001 S. 24<sup>th</sup> Street West  
Billings, MT 59102

Dear Mr. Sanderson:

This letter is in response to your request for preliminary assistance from the Natural Resources Conservation Service regarding the proposed Shiloh Road reconstruction project. The proposed route encompasses soils designated Farmland of Statewide Importance and Prime Farmland if irrigated. Some of the soils are labeled as potentially Hydric Soils or soils with Hydric Inclusions. The route also affects 4 irrigation canal systems; Cove Ditch, Canyon Creek Ditch, Billings Bench Water Association and Hogans Slough, which impacts wetlands.

If I can be of further assistance please call me at 406-657-6135 extension 115 or feel free to visit my office.

Sincerely,

Shad Weber  
District Conservationist  
USDA- NRCS

Cc: Tom Pick, NRCS Water Quality Specialist, Bozeman, MT



## **Appendix D      Programmatic Section 4(f) Evaluations**



Montana Division – Federal Highway Administration

Nationwide Section 4(f) Evaluation for Minor Impacts on Historic Sites  
Excluding Historic Bridge Replacements

Project Name: Shiloh Road Corridor  
Project Number: STPU 1031(2)  
Control Number: 4666

Date: December 12, 2006

Location: Billings Bench Water Association (BBWA) Canal (24YL161/1382/1532), 1904. The existing Shiloh Road crosses the canal with a bridge at RP 4.0, just south of Hesper Road in Yellowstone County. The canal is approximately 206.7 km (63 mi) long. It originates southeast of Laurel, MT from the Yellowstone River and runs northeast through Billings, MT into Five-Mile Creek, which is a tributary of the Yellowstone River, northeast of Billings.

NOTE: Additional information is provided for any response in a large box.  
Consult the Nationwide Section 4(f) Evaluation criteria.

APPLICABILITY

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | YES                                 | NO                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| 1. Is the 4(f) site adjacent to the existing highway?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Does the proposed project require the removal or alteration of historic structures and/or objects?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |                                     |
| <i>The reconstruction of Shiloh Road will require the widening of the approaches to the existing bridge and one additional bridge structure over the BBWA Canal for a multi-use path. The top of and exterior of the canal embankments would be impacted by grading for this new structure. Also, BBWA representative, Glen Downer, has indicated that the canal would need to be lined with concrete under the new multi-path bridge for maintenance reasons. In addition, there may be grading impacts to the exterior of the canal at the existing structure for the widening of the approach roads. Neither the function nor the capacity of the canal would be altered.</i> |                                     |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Does the proposed project disturb or remove archaeological resources, which are important to preserve in-place rather than to recover?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Is the impact on the 4(f) site considered minor (i.e., no effect or no adverse effect)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                     |                                     |
| <i>The impact is considered minor (No Adverse Effect). On August 23, 2006, SHPO concurred with MDT there was No Adverse Effect.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                     |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. Has the State Historic Preservation Office (SHPO) agreed in writing with the assessment of impacts and the proposed mitigation?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                     |                                     |
| <i>Yes. MDT sent Determination of Effect letter to SHPO on August 9, 2006. On August 23, 2006, SHPO concurred with MDT there was No Adverse Effect.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 6. Is the proposed action under an Environmental Impact Statement (EIS)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 7. Is the proposed project on a new location?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. The Scope-of-Work for the proposed project is one of the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| a. Improved traffic operation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                     |
| b. Safety improvements;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                     |
| c. 3R;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                     |                                     |



- d. Bridge replacement on essentially the same alignment; or
- e. Addition of lanes.

#### ALTERNATIVES CONSIDERED

1. The "do-nothing" alternative has been evaluated, and is not considered to be feasible and prudent.

*Do-nothing alternative does not address project purpose and need to improve mobility and safety and therefore is not prudent. Also, a multi-use path was identified at this location in the "Heritage Trail Plan" for the greater Billings non-motorized trail system. The do-nothing alternative would not be consistent with this plan.*

YES NO

☒ ☐

2. An alternative has been evaluated on the existing alignment, which improves the highway without any 4(f) impacts, and is also not considered to be feasible and prudent.
3. An alternative on a new location avoiding the 4(f) site has been evaluated, and is not considered to be feasible and prudent.

☒ ☐

☒ ☐

Descriptions of alternatives in 2 and 3 (above) are attached.

☒ ☐

#### MINIMIZATION OF HARM

1. The proposed project includes all possible planning to minimize harm.
2. Measures to minimize harm include the following:

YES NO

☒ ☐

*No piers for the new multi-use path bridge will be located in the BBWA Canal.*

*The overall width of the proposed improvements will be reduced at this location so that the existing roadway bridge would not need replacement with a wider bridge.*

*On the approaches to the Shiloh Road bridge, the two Traffic Signals alternatives as necessary and feasible eliminate the boulevard width separating the sidewalk from the roadway and install guardrail or other measures to meet safety requirements for separating pedestrians from traffic. The Roundabout alternatives would keep the boulevard; however, the width of the boulevard will be reduced to approximately 0.6 m (2 ft).*

*The Traffic Signals alternatives will also cantilever the fencing off the east side of the existing Road bridge (if determined necessary during final design) to avoid impacts to the canal.*

*At the crossing of the BBWA Canal, maintaining the roadway on the existing alignment minimizes impacts to the BBWA Canal because the impact is occurring at an existing disturbed area of the canal. If the crossing were to occur on a new alignment, a previously undisturbed area of the canal would be impacted and greater rechanneling of the canal may be needed, resulting in a greater impact.*

#### COORDINATION

1. The proposed project has been coordinated with the following:

YES NO

- a. SHPO (Dates of correspondence related to BBWA Canal: July 11, 2003; Determination of No Adverse Effect on: August 9, 2006. SHPO concurred on August 23, 2006)
- b. Advisory Council on Historic Preservation (ACHP) (date: N/A)
- c. Property Owner: Billings Bench Water Association was contacted on January 12, 2006.
- d. Local/State/Federal Agencies

☒ ☐

☐ ☒

☒ ☐

☒ ☐

List: City of Billings (date: January 27, 2003), Yellowstone County (date: June 10, 2003), COE (date: May 27, 2003), County Commissioners (date: June 10, 2003)

2. One of the preceding had the following comment(s) regarding this proposed project, and/or the mitigation. ☒ ☐

For item #1.a) SHPO concurred with the findings for the proposed project's effects (if any) to this site on August 23, 2006. (see attached copies of August 23, 2006 letter to same w/"Determination of Effect").

For item #1. c) BBWA informed the project consultant, Engineering, Inc., that the canal would need to be lined with concrete underneath the new proposed structure. (Phone call with Kirk Spalding, Engineering, Inc. on 01/12/06.)

For item #1. d) Other agencies had no comment.

#### SUMMARY

All required alternatives have been evaluated and the proposed project meets all the criteria included in the Nationwide Programmatic Section 4(f) evaluation approved on December 23, 1986. This Programmatic Evaluation includes all possible planning to minimize harm, which will be incorporated in this proposed project.

#### APPROVAL

This document is submitted pursuant to 49 USC 303 and in accordance with 16 USC 47.

Signed: 

MDT Environmental Services

Date: 12/13/06

Approved: 

Federal Highway Administration

Date: 15 DEC 2006

**MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call 406.444.7228 or TTY (800.335.7592) or call Montana Relay at 711.**

cc:	Bruce Barrett	MDT Billings District Administrator
	Kent Barnes, P.E.	MDT Bridge Engineer
	Paul Ferry, P.E.	MDT Highway Engineer
	John H. Horton	MDT Right-of-Way Bureau Chief
	David W. Jensen	MDT Fiscal Programming Section Supervisor
	Tom Hansen, P.E.	MDT Environmental Services Bureau Engineering Section Supervisor
	FILE	MDT Environmental Services

## **BBWA Canal – Alternatives Considered**

2. An alternative has been evaluated on the existing alignment, which improves the highway without any 4(f) impacts, and is also not considered to be feasible and prudent.

*There is no alternative on the existing alignment that can improve the roadway without impacting the site because the existing roadway crosses the canal.*

*An alternative that eliminates the bridge for the multi-use path over the canal would not provide the multi-use path connectivity between the north and south sides of the BBWA Canal. Pedestrians and bicyclists using the multi-use path would be required to use the vehicle travel lanes to cross the canal. This alternative is not prudent and was eliminated for safety reasons.*

*An alternative was also evaluated that narrowed the roadway cross section so that the existing structure would accommodate the proposed improvements including the multi-use path. Although there would be no impacts from a new multi-use path bridge, there would be impacts from the widening of approaches to the existing bridge to accommodate the roadway and multi-use path. This alternative would require several design modifications including reducing or eliminating the proposed boulevard width that separates the sidewalk and multiuse path from the roadway. This modification would reduce pedestrian safety. Other safer and feasible alternatives to minimize impacts to the site were identified, so this alternative was eliminated because it was not prudent.*

3. An alternative on a new location avoiding the 4(f) site has been evaluated, and is not considered to be feasible and prudent.

*The purpose of the proposed project is to improve mobility and safety on Shiloh Road. Any alternative that considered improvements in a new location is not prudent because it would not meet the purpose and need of the project. Also, due to existing and proposed development adjacent to the roadway throughout the corridor, the proposed project improvements are limited to the existing alignment. In addition, any alternative alignment that was shifted to the east or west would have similar or greater impacts to the 4(f) site because the canal would need to be crossed.*

Montana Division – Federal Highway Administration

**Nationwide Section 4(f) Evaluation for Minor Impacts on Historic Sites**  
Excluding Historic Bridge Replacements

**Project Name:** Shiloh Road Corridor  
**Project Number:** STPU 1031(2)  
**Control Number:** 4666

**Date:** December 12, 2006

**Location:** Snow Ditch (24YL1563), 2003. The existing Shiloh Road crosses the ditch, which parallels Central Avenue in Billings, MT. The ditch diverts water for the Big Ditch main canal and is part of a three-system irrigation organization known as the Big Ditch group in Yellowstone County.

**NOTE:** Additional information is provided for any response in a large box.  
Consult the Nationwide Section 4(f) Evaluation criteria.

**APPLICABILITY**

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | YES                                 | NO                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| 1. Is the 4(f) site adjacent to the existing highway?                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Does the proposed project require the removal or alteration of historic structures and/or objects?<br><br><i>The reconstruction of Shiloh Road will require the installation of a new longer culvert due to the increase in roadway width. The relocation of a diversion structure, head gate, and small pumphouse will be required. Additional ROW outside of existing MDT ROW will also need to be acquired that incorporates part of the ditch into MDT ROW. The capacity of the ditch would not be altered.</i> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Does the proposed project disturb or remove archaeological resources, which are important to preserve in-place rather than to recover?                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 4. Is the impact on the 4(f) site considered minor (i.e., no effect or no adverse effect)?<br><br><i>The impact is considered minor (No Adverse Effect). On August 23, 2006, SHPO concurred with MDT there was No Adverse Effect.</i>                                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 5. Has the State Historic Preservation Office (SHPO) agreed in writing with the assessment of impacts and the proposed mitigation?<br><br><i>Yes. MDT sent Determination of Effect letter to SHPO on August 9, 2006. On August 23, 2006, SHPO concurred with MDT there was No Adverse Effect.</i>                                                                                                                                                                                                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 6. Is the proposed action under an Environmental Impact Statement (EIS)?                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 7. Is the proposed project on a new location?                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8. The Scope-of-Work for the proposed project is one of the following:                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| a. Improved traffic operation;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                     |
| b. Safety improvements;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |                                     |
| c. 3R;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                     |                                     |
| d. Bridge replacement on essentially the same alignment; or                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |                                     |
| e. Addition of lanes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                     |                                     |

#### ALTERNATIVES CONSIDERED

YES NO

1. The "do-nothing" alternative has been evaluated, and is not considered to be feasible and prudent.

☒ ☐

*Do-nothing alternative does not address project purpose and need to improve mobility and safety and therefore is not prudent.*

2. An alternative has been evaluated on the existing alignment, which improves the highway without any 4(f) impacts, and is also not considered to be feasible and prudent.

☒ ☐

3. An alternative on a new location avoiding the 4(f) site has been evaluated, and is not considered to be feasible and prudent.

☒ ☐

Descriptions of alternatives in 2 and 3 (above) are attached.

☒ ☐

#### MINIMIZATION OF HARM

YES NO

1. The proposed project includes all possible planning to minimize harm.

☒ ☐

2. Measures to minimize harm include the following:

*Under all of the build alternatives, the standard (horizontal to vertical) side slope will be replaced with a steeper side slope where the ditch is not in a culvert in order to keep the ditch open and minimize impacts related to grading. The installation of guardrail may also be required as a safety measure along all sections with steepened side slopes.*

*At the crossing of the Snow Ditch, maintaining the roadway on the existing alignment minimizes impacts to Snow Ditch because the impact is occurring at an existing disturbed area of the canal. If the crossing were to occur on a new alignment, a previously undisturbed area of the canal would be impacted, resulting in a greater impact.*

*MDT ROW will be minimized in this location.*

#### COORDINATION

YES NO

1. The proposed project has been coordinated with the following:

- a. SHPO (Dates of correspondence related to Snow Ditch: July 11, 2003; Determination of No Adverse Effect on: August 9, 2006. Concurred on August 23, 2006)

☒ ☐

- b. Advisory Council on Historic Preservation (ACHP) (date: N/A)

☐ ☒

- c. Property Owner: Big Ditch Company was contacted on November 2005.

☒ ☐

- d. Local/State/Federal Agencies:

☒ ☐

List: City of Billings (date: January 27, 2003), Yellowstone County (date: June 10, 2003), COE (date: May 27, 2003), County Commissioners (date: June 10, 2003)

2. One of the preceding had the following comment(s) regarding this proposed project, and/or the mitigation. ☒ ☐

For item #1.a) SHPO concurred with the findings for the proposed project's effects (if any) to this site on August 23, 2006. (see attached copies of August 23, 2006 letter to-same w/"Determination of Effect").

For item #1. c) Big Ditch Company informed the project consultant, Engineering, Inc., that they plan to abandon the ditch east of Shiloh. The ditch rider (Roy Zahm) indicated that the Snow Ditch has not yet been abandoned although it is in the process. (Correspondence with Kirk Spalding, Engineering, Inc. on 11/05.)

For item #1. d) Other agencies had no comment.

#### SUMMARY

All required alternatives have been evaluated and the proposed project meets all the criteria included in the Nationwide Programmatic Section 4(f) evaluation approved on December 23, 1986. This Programmatic Evaluation includes all possible planning to minimize harm, which will be incorporated in this proposed project.

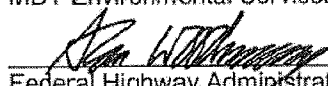
#### APPROVAL

This document is submitted pursuant to 49 USC 303 and in accordance with 16 USC 47.

Signed: 

MDT Environmental Services

Date: 12/13/06

Approved: 

Federal Highway Administration

Date: 15 DEC 2006

**MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call 406.444.7228 or TTY (800.335.7592) or call Montana Relay at 711.**

cc:	Bruce Barrett	MDT Billings District Administrator
	Kent Barnes, P.E.	MDT Bridge Engineer
	Paul Ferry, P.E.	MDT Highway Engineer
	John H. Horton	MDT Right-of-Way Bureau Chief
	David W. Jensen	MDT Fiscal Programming Section Supervisor
	Tom Hansen, P.E.	MDT Environmental Services Bureau Engineering Section Supervisor
	FILE	MDT Environmental Services

### **Snow Ditch – Alternatives Considered**

2. An alternative has been evaluated on the existing alignment, which improves the highway without any 4(f) impacts, and is also not considered to be feasible and prudent.

*Reducing the number of lanes on Central Avenue or Shiloh Road to avoid the Snow Ditch is not prudent because the corridor and intersection would not be improved to address safety and capacity issues.*

*An alternative that shifts the roadway to either the north or south does not avoid the Snow Ditch because it is located on the north side of Central Avenue west of Shiloh Road and on the south side of Central Avenue east of Shiloh Road.*

3. An alternative on a new location avoiding the 4(f) site has been evaluated, and is not considered feasible and prudent.

*The purpose of the proposed project is to improve mobility and safety on Shiloh Road. Any alternative that considered improvements in a new location is not prudent because it would not meet the purpose and need of the project.*

*An alternative alignment of Shiloh Road that is shifted to the east or west would not be prudent because the alternative would impact Snow Ditch at a previously undisturbed area and therefore would have greater impacts.*



Montana Department of Transportation

2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001

Jim Lynch, Director  
Brian Schweitzer, Governor

June 26, 2006

RECEIVED

JUN 27 2006

FHWA  
MONTANA DIVISION

Alan Woodmansey, PE, Operations Engineer  
Federal Highway Administration (FHWA)  
585 Shepard Way  
Helena, MT 59601-9785

**Subject: 4(f) Concurrence Request  
Shiloh Road  
STPU 1031(2)  
CN 4666**

Dear Alan Woodmansey:

Enclosed are copies of correspondence from the City of Billings and Yellowstone County. The city and county correspondence is in regard to certain publicly-owned parcels that may be impacted by the proposed subject project. In that correspondence, officials with jurisdiction over those parcels concluded that they are not "significant" in terms of 4(f) applicability. At this point, we request that FHWA formally concur with those city and county conclusions. If FHWA does concur, please sign below and return this letter to me at the address shown in the letterhead.

If you have any questions or concerns, please contact me at 406.444.7203. I will be pleased to assist you.

Sincerely,

Heidi Bruner  
Project Development Engineer  
MDT Environmental Services

cc (w/o encl):	Bruce Barrett	Billings District Administrator
	Jean Riley, PE	Environmental Services Bureau Chief
	Tom Hansen, PE	Environmental Services Engineering Section Supervisor
	Tom Martin	Consultant Design
	Tim Conway	Consultant Design
	Fred Bente	Consultant Design
	FILE	

encl.

FHWA Concur: \_\_\_\_\_

Date: 31 July 2006

hsb:S:\PROJECTS\BILLINGS\4000-4999\4666\4666EN4\ICSP004\_FHWA.DOC





Montana Department of Transportation

2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001

Jim Lynch, Director  
Brian Schweitzer, Governor

February 15, 2006

YELLOWSTONE COUNTY COMMISSIONERS  
RECEIVED

FEB 16 2006

John Ostlund, County Commissioner - Chairman  
Yellowstone County  
PO Box 35000  
Billings, MT 59107

**SUBJECT: Information Request for County Park Sites – Section 4(f) Applicability**

**SHILOH ROAD CORRIDOR STUDY**

**Project Number: STPU 1031(2)**

**Control Number: 4666**

RECEIVED  
FEB 28 2006  
ENVIRONMENTAL

Dear John Ostlund:

I am writing to request the County's assistance in providing information on two sites owned by the County. This information will be used for an Environmental Assessment (EA) being prepared by the Montana Department of Transportation (MDT) and Federal Highway Administration (FHWA) for Shiloh Road. The EA assesses potential impacts that may occur from the reconstruction of Shiloh Road between Canyon Creek Bridge and Poly Drive. The build alternatives may impact county owned park parcels as shown in the attached figure. Your input is needed to determine if a certain federal regulation might be applicable to this project.

**Section 4(f)**

The federal regulation of interest is codified at 49 USC 303 (Section 4(f)) of the 1966 US Department of Transportation Act and the FHWA regulations at 23 CFR 771.135. According to the Section 4(f) regulations, the FHWA must follow specific procedures in regard to

“publicly owned land from a park, recreation area, or wildlife and waterfowl refuge of national, State or local significance as determined by the Federal, State, or local officials having jurisdiction thereof...”

Under Section 4(f), FHWA is prohibited from approving the use of land from a significant publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any significant historic site unless a determination is made that (1) there is no feasible and prudent alternative to the use of land from the property, and (2) the action includes all possible planning to minimize harm to the property. The determination of whether or not a site is considered “significant” is to be made by the official(s) having jurisdiction over the site in question.

MDT is asking for assistance with information to determine potential applicability of Section 4(f) to two County owned sites. For purposes of applying this regulation, County officials should consider four criteria in evaluating each site. All four of the criteria discussed below must be met for Section 4(f) to be applied to the parcel. To follow is each criterion, our understanding of information relevant to determining whether or not the criterion is met, and a request for verification of that information from the “official with jurisdiction”.

**Publicly-Owned Land**

First, the site must be publicly owned. Our review of the Yellowstone County geographic information system (GIS) website identified two publicly owned properties within or near the project study area. Those properties have been identified as County parcels and are shown on the attached figures. Our understanding is that the only publicly owned County parcels in the project corridor include:

- Sharptail parcel - West side of Shiloh Road between King Avenue and Hesper Road
- Clydesdale Park - West side of Shiloh Road between Central Avenue and Broadwater Avenue

Please inform us if our understanding is incorrect or if there are any additional County-owned parcels in the Shiloh Corridor.

### **Public Access**

Second, in addition to being publicly owned, the site must be open to the public to meet the definition of a Section 4(f) site. The entire public park or public recreation area must permit visitation by the general public at any time. Section 4(f) would not apply when visitation is permitted to only a select group and not the entire public. Based on site observations, the Sharptail parcel and Clydesdale Park do not appear to be fenced or gated and would be open to the general public at all times. Please inform us if our understanding is incorrect.

### **Definition of Park or Recreation Area**

Third, one of the major purposes and functions of the site must be a park or recreation area. Publicly owned land is considered to be a park or recreation area when the land has been designated officially as such by a Federal, State, or local agency and the official with jurisdiction determines that one of its major purposes or functions is for park or recreation purposes. Please note that incidental, secondary, occasional or dispersed recreational activities do not constitute a major purpose. Management plans that address or officially designate the major purpose(s) of the property should be reviewed as part of this determination.

We conducted research in an effort to make a preliminary conclusion as to whether or not each of the above mentioned sites has been designated as a park or recreation area. The following City and County master planning documents were researched: Parks2020 - The Billings Parks, Recreation and Open Space Master Plan and Summary (including the referenced Yellowstone County GIS information), Heritage Trail Plan, City and County Growth Plan, and West Billings Plan.

Based on this research, the Sharptail parcel is identified in the Parks2020 Plan, the West Billings Plan and the City and County Growth Plan. The Growth Plan identifies Sharptail as parkland that is currently being leased for other purposes. The West Billings Plan and the Parks2020 Plan identify Sharptail as a planned 53-acre park that "should be developed as a recreational complex that would also serve as a neighborhood cultural and educational center."

Clydesdale Park is identified in the Yellowstone County Comprehensive Parks Plan, the Parks 2020 Plan and the Growth Plan as a Neighborhood Park and Playground (NPP). This type of park is generally two to eight acres in size and is intended to provide close to home opportunities for a variety of unstructured active and passive recreation activities. The Comprehensive Parks Plan specifies that this type of park should be accessible to bicycles and pedestrians from public streets or utility ROW.

Based on the information from these plans, we concluded the following:

- 1) Sharptail parcel – the major function of this parcel is for future park and recreation purposes
- 2) Clydesdale Park – is a designated park and its major function is for park and recreation purposes

Please inform us if our conclusions about the major purposes of those parcels is incorrect.

### **Significance of Publicly-Owned Parcels**

If all three of the criteria discussed above are met, then the fourth criterion must be considered. For the fourth criterion to be met, the site must be of national, State, or local significance.

Significance means that in comparing the availability and function of the park, recreation area or wildlife and waterfowl refuge with the park, recreation or refuge objectives of the community or the authority, the land in question plays an important role in meeting those objectives.

If the "official with jurisdiction" for each of those two sites concludes that the site is "significant", then the Section 4(f) regulations would apply. As a result, FHWA would be prohibited from approving a "use" of land from the site

(for the MDT project) unless a determination is made that (1) there is no feasible and prudent alternative to the use of land from the property, and (2) the action includes all possible planning to minimize harm to the property.

We request that the "official with jurisdiction" for each of those properties identify if each property would be considered "significant". Please provide this information below and sign the signature block at the end of this letter and return a copy to me if you concur with the information and findings presented in this letter. If you determine that any of the above stated findings are incorrect, please respond with a letter that provides the correct information.

Please contact me at 406-444-0456 with any questions. Thank you for your assistance in this matter.

Sincerely,




Thomas L. Hansen, P.E.  
Environmental Services, Engineering Section Supervisor  
Montana Department of Transportation

The official with jurisdiction concurs with the findings of this letter and that:

Sharptail parcel ☐ is ☒ is not "significant".

Clydesdale Park ☐ is ☒ is not "significant".

  
Name (Official with Jurisdiction over Shaptail)

Chair  
Title

02-24-06  
Date

  
Name (Official with Jurisdiction over Clydesdale)

Chair  
Title

02-24-06  
Date

Copies: Fred Bente – Consultant Design Project Manager  
Bruce Barrett – Administrator, MDT Billings District  
Paul R. Ferry, PE – MDT Highways Engineer  
Tim Conway, PE – MDT Consultant Plans Engineer  
Alan Woodmansey – FHWA Operations Engineer  
Precon File, MDT Preconstruction Bureau  
Kirk Spalding, Engineering, Inc.  
Debra Perkins-Smith, David Evans and Associates, Inc.  
Jean Riley, PE – MDT Environmental Services Bureau Chief

Enclosures: Site Map

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REC'D MAR 03 2006



## SHILOH ROAD

CORRIDOR

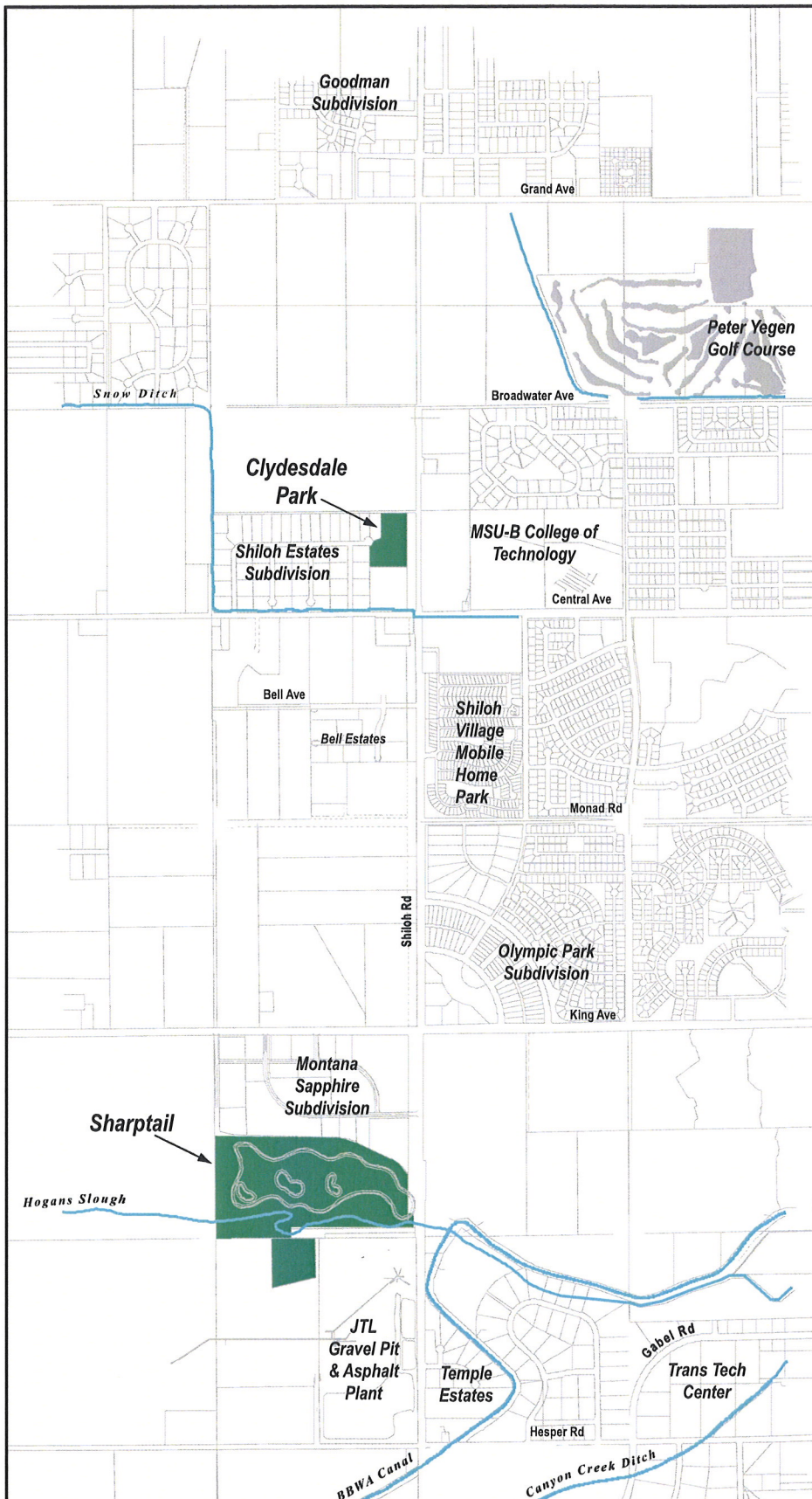
STPU 1013(2) C.N. 4666

### Potential Section 4(f) Sites

#### County Owned Parks

#### Legend

 = County Owned Park Parcel



Sources: City ownership and park information from Montana Department of Revenue,  
Computer Assisted Mass Appraisal System (CAMA)  
Map is not to scale  
Plotted: December 2005  
P:\ENGN0000-0001 Shiloh Rd\Graphics\4(f) Site Map\4(f) Site county parks\_12\_05.ai



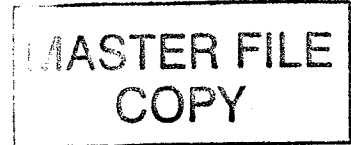


Montana Department of Transportation

2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001

Jim Lynch, Director  
Brian Schweitzer, Governor

February 8, 2006



Christina Volek, Acting City Manager  
City of Billings  
PO BOX 1178  
Billings, MT 59103

RECD FEB 22 2006

**SUBJECT: Information Request for "Significance" of City Park Sites**

**SHILOH ROAD CORRIDOR STUDY**

**Project Number: STPU 1031(2)**

**Control Number: 4666**

Dear Christina Volek:

I am writing to request the City's assistance in providing information on several sites owned by the City. This information will be used for an Environmental Assessment (EA) being prepared by the Montana Department of Transportation (MDT) and Federal Highway Administration (FHWA) for Shiloh Road. The EA assesses potential impacts that may occur from the reconstruction of Shiloh Road between Canyon Creek Bridge and Poly Drive. The build alternatives may impact city owned park parcels as shown in the attached figure. Your information is needed to determine if a certain federal regulation might be applicable to this project.

**Section 4(f)**

The federal regulation of interest is codified at 49 USC 303 (Section 4(f)) of the 1966 US Department of Transportation Act and the FHWA regulations at 23 CFR 771.135. According to the Section 4(f) regulations, the FHWA must follow specific procedures in regard to

"publicly owned land from a park, recreation area, or wildlife and waterfowl refuge of national, State or local significance as determined by the Federal, State, or local officials having jurisdiction thereof..."

Under Section 4(f), FHWA is prohibited from approving the use of land from a significant publicly owned public park, recreation area, or wildlife or waterfowl refuge, or any significant historic site unless a determination is made that (1) there is no feasible and prudent alternative to the use of land from the property, and (2) the action includes all possible planning to minimize harm to the property. The determination of whether or not a site is considered "significant" is to be made by the official(s) having jurisdiction over the site in question.

MDT is asking for assistance with information to determine potential applicability of Section 4(f) to each of several parcels in the corridor. For purposes of applying this regulation, City officials should consider four criteria in evaluating each site. All four of the criteria discussed below must be met for Section 4(f) to be applicable to a parcel. To follow is each criterion, our understanding of information relevant to determining whether or not the criterion is met, and a request for verification of that information from the "official with jurisdiction".

### **Publicly Owned Land**

First, the site must be publicly owned. Our review of the Yellowstone County geographic information system (GIS) website identified several publicly owned properties within or near the project study area. Those properties have been identified as City park parcels and are shown on the attached map. Our understanding is that the only publicly owned City park parcels that may be impacted by this project include

- Ann Ross Park - West side of Shiloh Road between King Avenue and Monad Road,
- Olympic Subdivision Park - East side of Shiloh Road between King Avenue and Monad Road,
- Rush Subdivision Park - West side of Shiloh Road south of Park Hill Drive,
- Circle 50 Subdivision Park – East side of Shiloh Road at Colton Boulevard (at Big Ditch Trail), and
- Missions United Subdivision Park – East side of Shiloh Road at Colton Boulevard (at Big Ditch Trail).

Please inform us if our understanding is incorrect or if there are any additional city owned parcels. (Please provide this information in the attached table.)

### **Public Access**

Second, in addition to being publicly owned, the site must be open to the public to meet the definition of a Section 4(f) site. The entire public park or public recreation area must permit visitation by the general public at any time. Section 4(f) would not apply when visitation is permitted to only a select group and not the entire public.

Based on site observations, the sites do not appear to be fenced or gated and would be open to the general public at all times. Please inform us if our understanding is incorrect. (Please provide this information in the attached table.)

### **Definition of Park or Recreation Area**

Third, one of the major purposes and functions of the site must be a park or recreation area. Publicly owned land is considered to be a park or recreation area when the land has been officially designated as such by a Federal, State, or local agency and the official with jurisdiction determines that one of its major purposes or functions is for park or recreation purposes. Please note that incidental, secondary, occasional or dispersed recreational activities do not constitute a major purpose.<sup>1</sup> Management plans that address or officially designate the major purpose(s) of the property should be reviewed as part of this determination.

We conducted research in an effort to make a preliminary conclusion as to whether or not each of the above-mentioned sites has been designated as a park or a recreation area. The following city master planning documents were researched: *Parks2020 - The Billings Parks, Recreation and Open Space Master Plan and Summary* (including the referenced Yellowstone County GIS information), *Heritage Trail Plan*, *City and County Growth Plan*, and *West Billings Plan*.

Of the above-mentioned sites, only the Olympic Subdivision Park is specifically identified in any of those documents. In the *Parks2020 Plan*, the Olympic Subdivision Park is identified as Urban Green Space, and the plan framework specifies that priority green space will be provided in parks located at gateways to the community, along major transportation corridors, and at “edges of neighborhoods”. Ann Ross Park, Rush Subdivision Park, Circle 50 Subdivision Park and Missions United Subdivision Park were not identified in any of the reviewed city master planning documents. We request that the “official with jurisdiction” for those properties identify if one of the major purposes or functions is for a park or recreation area.

<sup>1</sup> US Department of Transportation Federal Highway Administration, Office of Planning, Environment and Realty Project Development and Environmental Review, *FHWA Section 4(f) Policy Paper*, page 11, March 1, 2005.

Incidental, secondary, occasional or dispersed park, recreational or refuge activities do not constitute a major purpose. (Please provide this information in the attached table.)

**Significance of Publicly Owned Parcels**

If all of the criteria discussed above are met, then the fourth criterion must be considered. For the fourth criterion to be met, the site must be of National, State, or local significance. Significance means that in comparing the availability and function of the park, recreation area or wildlife and waterfowl refuge with the park, recreation or refuge objectives of the community or the authority, the land in question plays an important role in meeting those objectives. Management plans or other official forms of documentation regarding the land, if available and up-to-date, can be important in this determination. We request that the "official with jurisdiction" for each of the properties identify if each property would be considered "significant". (Please provide this information in the attached table.)

To provide the needed information, please have the "official with jurisdiction" verify, edit (if necessary), and complete the attached form. Please return the form to the address indicated. We respectfully request that the City provide a response as soon as possible so that MDT can move forward with conducting a thorough environmental analysis for the EA for the Shiloh Road Corridor Study Project. For your information, the County will receive a similar request for information pertaining to Clydesdale Park and the proposed Sharptail Park.

After reviewing your responses to this information, MDT will send the City a letter summarizing our interpretation of the applicability of Section 4(f) for each parcel and request the City's concurrence on those findings. Please contact me at 406.444.0456 with any questions. Thank you for your assistance in this matter.

Sincerely,



Thomas L. Hansen, PE

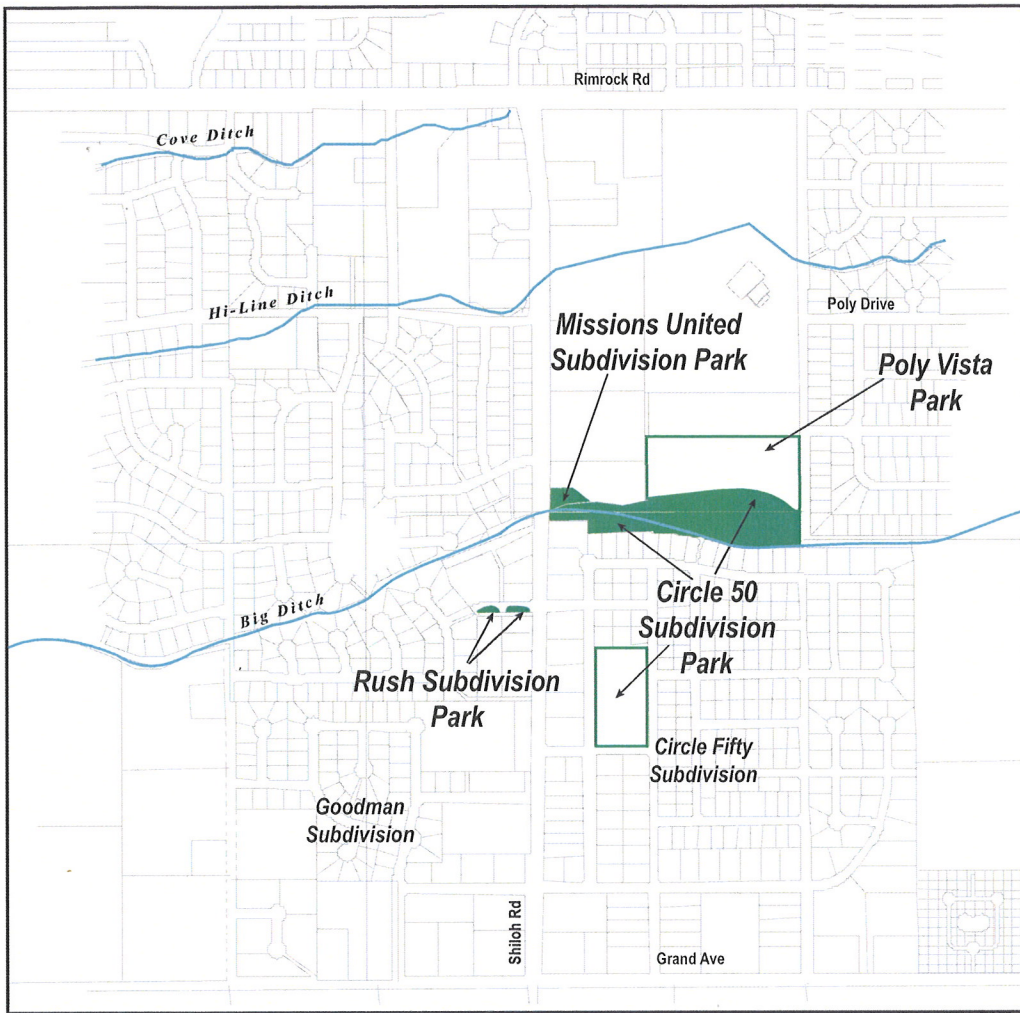
Environmental Services Engineering Section Supervisor  
Montana Department of Transportation

Copies: Fred Bente – Consultant Design Project Manager  
Bruce Barrett – Administrator, MDT Billings District  
Paul R. Ferry, PE – MDT Highways Engineer  
Tim Conway, PE – MDT Consultant Plans Engineer  
Alan Woodmansey – FHWA Operations Engineer  
Precon File, MDT Preconstruction Bureau  
Kirk Spalding, Engineering, Inc.  
Debra Perkins-Smith, David Evans and Associates, Inc.  
Jean Riley, PE – MDT Environmental Services Bureau Chief

Enclosures: Site Map, Form

TLH:hsb:S:\PROJECTS\BILLINGS\4666\4666EN4fCSP001.doc





**SHILOH ROAD**

**CORRIDOR**

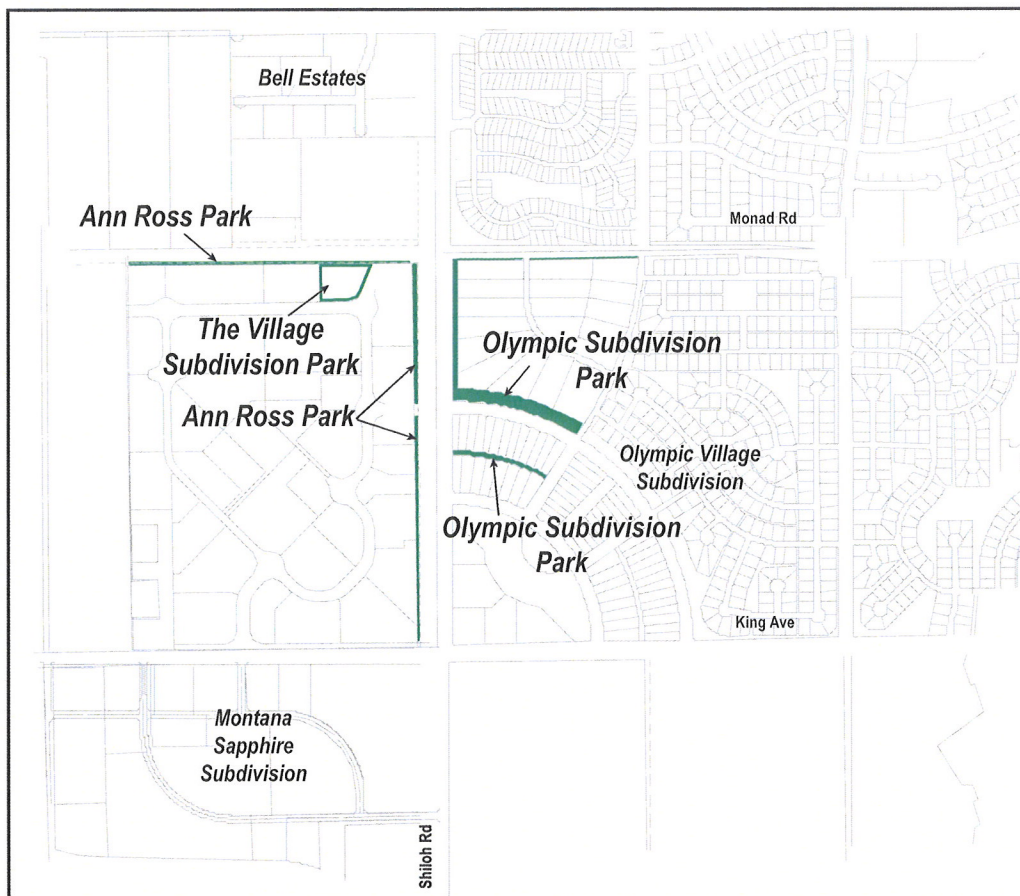
STPU 1013(2) C.N. 4666

## Potential Section 4(f) Sites

**City Owned Parks**

### Legend

- = City Owned Park -- Potentially Impacted
- = City Owned Park -- Not Impacted



Sources: City ownership and park information from Montana Department of Revenue, Computer Assisted Mass Appraisal System (CAMA)  
 Map is not to scale  
 Plotted: December 2005  
 P:\ENGN0000-0001 Shiloh Rd\Graphics\4(f) Site Map\4(f) Site city parks\_12\_05.ai





MINNESOTA  
DEPARTMENT OF  
TRANSPORTATION  
ST. PAUL, MN 55155



Minnesota Dept. of Transportation

#### Section 4(f) Applicability

Site	Publicly-Owned Site (City-Owned Site)	Open to the General Public	Officially Designated as a Park or Recreation Area?	Is Major Purpose or Function for Park or Recreation?	What are the Functions or Activities on the Site? (i.e. undeveloped, natural park, fully developed, multiple use park, sports complex, recreational trail, play lot, open space, etc.)	Is This a Significant* Park or Recreation Area? (yes or no)
Area Ross Park	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	No	Yes	Currently undeveloped, open space buffer. Plans are to add appropriate landscaping, walkways, bike trail.	No
Bush Subdivision Park	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	No	Yes	Entryway landscape strip. (open green space) to Shiloh Pointe Subdivision. Fully developed.	No
Circle 50 Subdivision Park	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	No	Yes	5 acre neighborhood park. Fully developed. (Poly Vista Park - semi developed recreation park)	No
Mission United Subdivision Park	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	No	Yes	Trailway corridor, undeveloped park. Open space.	No
Olympic Subdivision Park	<input checked="" type="radio"/> Yes	<input checked="" type="radio"/> Yes	Yes	Yes	Greenway open space walkway. Fully landscaped.	No

\* Significant means that is comparing the availability and function of the park, recreation area or wildlife and watershed refuge with the park, recreation or refuge objectives of the community or the authority, declared in question plays an important role in meeting those objectives.

Official with Jurisdiction:

Name:

Title:

Date:

Please return completed form to:

Thomas L. Hansen, PE  
Environmental Services Engineering Section Supervisor  
Minnesota Department of Transportation  
2701 Prospect Avenue  
PO Box 201001  
Helena, MT 59620-1001

## Appendix E      Noise



## Noise

The following text and tables are from the Shiloh Road Corridor Study, STPU 1031(2), CN 4666, Traffic Noise Study (August 2006) prepared by Big Sky Acoustics, LLC.

### Field Noise Measurements

The field-testing for this noise study was performed along the proposed alignment during morning and evening rush-hour periods. Ambient noise levels were taken using a CEL-573.C1 precision impulse integrating sound level meter S1.4 Type 1. The meter was calibrated using a CEL s84/2 acoustical calibrator before use, with meteorological data taken before and after the field measurements. Ambient levels were taken for a 1-hour period on 11/26/02, 11/27/02 and 11/2/04. Table 1 shows the recorded ambient noise levels and the modeled noise levels. Table 2 shows the predicted noise levels at all identified receptors in the design year (2027) for the No Build Alternative, Urban Typical Section Alternative, and Rural Typical Section Alternative. Figures 1-2 depict measurement locations 1-4 and the 33 receptors.

**Table 1 Measured Ambient vs. Predicted Noise Levels**

Meas. Location	Date	Time (hours)	Distance and Direction from Existing Shiloh Road Centerline (meters/feet)	Shiloh Road Northbound Traffic Tallied During Measurement	Shiloh Road Southbound Traffic Tallied During Measurement	Measured $L_{eq}(h)$	Modeled $L_{eq}(h)$
1	11/27/02	1619 to 1719	35 m/115 ft east	Cars: 491 MT: 3 HT: 15	Cars: 427 MT: 10 HT: 19	62 dBA	62 dBA
2	11/26/02	1643 to 1743	28 m/92 ft east	Cars: 437 MT: 4 HT: 2	Cars: 349 MT: 10 HT: 10	63 dBA	61 dBA
3	11/27/02	0725 to 0825	27 m/89 ft east	Cars: 275 MT: 6 HT: 8	Cars: 243 MT: 6 HT: 25	64 dBA	62 dBA
4	11/02/04	1600 to 1700	24 m/79 ft west	Cars: 394 MT: 9 HT: 7	Cars: 406 MT: 13 HT: 25	65 dBA	63 dBA

Source: Traffic Noise Study (BSA, 2006)

Table 2 Predicted Traffic Noise Levels

Receptor	Description	Approximate Distance to New and Existing Centerline (meters/feet)	No-Build Alternative $L_{eq}(h)$ , Present Year 2002 (dBA)	No-Build Alternative $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative - 7 Traffic Signals $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative - 7 Roundabouts $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative - 11 Traffic Signals $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative - 11 Roundabouts $L_{eq}(h)$ , Design Year 2027 (dBA)
Poly Drive to Grand Avenue								
R7	Single-family residence	20 m/65 ft	65	69	69	69	69	69
R8	Single-family residence	20 m/65 ft	65	69	69	69	69	69
R9	Represents nine single-family residences.	24 m/79 ft	64	68	68	68	68	68
SUB2	Mission United Subdivision - Proposed	24.4 m/80 ft	64	68	68	68	68	68
R10	Represents three single-family residences.	25 m/82 ft	61	65	66	66	66	66
APT3	Tender Nest Assisted Living: Represents three buildings.	24 m/79 ft	64	68	68	68	68	68
TH3	Fox Run II Townhomes: Represents four buildings.	24 m/79 ft	64	68	69	69	69	69
R11	Represents three single-family residences.	25 m/82 ft	63	67	68	68	68	68
APT4	Highbate Assisted Living	29 m/95 ft	62	66	68	68	68	68
TH4	Country Manor Townhomes: Represents four buildings.	25 m/82 ft	63	67	69	69	69	69
CH3	Shiloh United Methodist Church	80 m/263 ft	54	58	61	61	61	61
Grand Avenue to Yegen Access								
R1	Single-family residence: #1122 Shiloh Road (historic site)	45 m/148 ft	60	64	67	66	67	65
MP1	Master Planned Mixed Use with residences (Cert. #2702)	24.4 m/80 ft	64	69	71	71	71	69

Table 2 Predicted Traffic Noise Levels (cont.)

Receptor	Description	Approximate Distance to New and Existing Centerline (meters/feet)	No-Build Alternative Present Year $L_{eq}(h)$ , 2002 (dBA)	No-Build Alternative Design Year $L_{eq}(h)$ , 2027 (dBA)	Build Alternative – 7 Traffic Signals $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative – 7 Traffic Roundabouts $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative – 11 Traffic Signals $L_{eq}(h)$ , Design Year 2027 (dBA)	Build Alternative – 11 Traffic Roundabouts $L_{eq}(h)$ , Design Year 2027 (dBA)
Yegen Access to Broadwater Avenue								
MP2	Master Planned Mixed Use with residences (Cert. #2315)	24.4 m/80 ft	64	68	71	71	71	70
Broadwater Avenue to Howard Avenue								
R2	Single-family residence: #676 Shiloh Road	30 m/98 ft	61	67	69	67	69	67
CH1	Faith Chapel	50 m/164 ft	57	62	65	64	65	64
Howard Avenue to Central Avenue								
P1	Clydesdale Park	40 m/131 ft	59	64	67	67	67	65
Central Avenue to Monad Road								
S1	Old Shiloh School	55 m/180 ft	56	62	65	64	65	63
MH1	Mobile home park: Represents approximately 30 front row homes facing Shiloh Road.	35 m/115 ft	60	66	69	69	69	69
R3	Bell Estates: Represents two single-family homes.	100 m/328 ft	52	57	61	61	61	61
Monad Road to King Avenue								
APT1	Olympic Village Apartments: Represents six, 2-story apartment buildings.	40 m/131 ft	59	65	68	67	68	67
TH1	Ponderosa Townhomes: Represents two buildings	25 m/82 ft	63	69	71	71	71	71
MP3	Proposed Mixed Use with residences (Cert. #2064)	30 m/98 ft	61	67	70	70	70	70

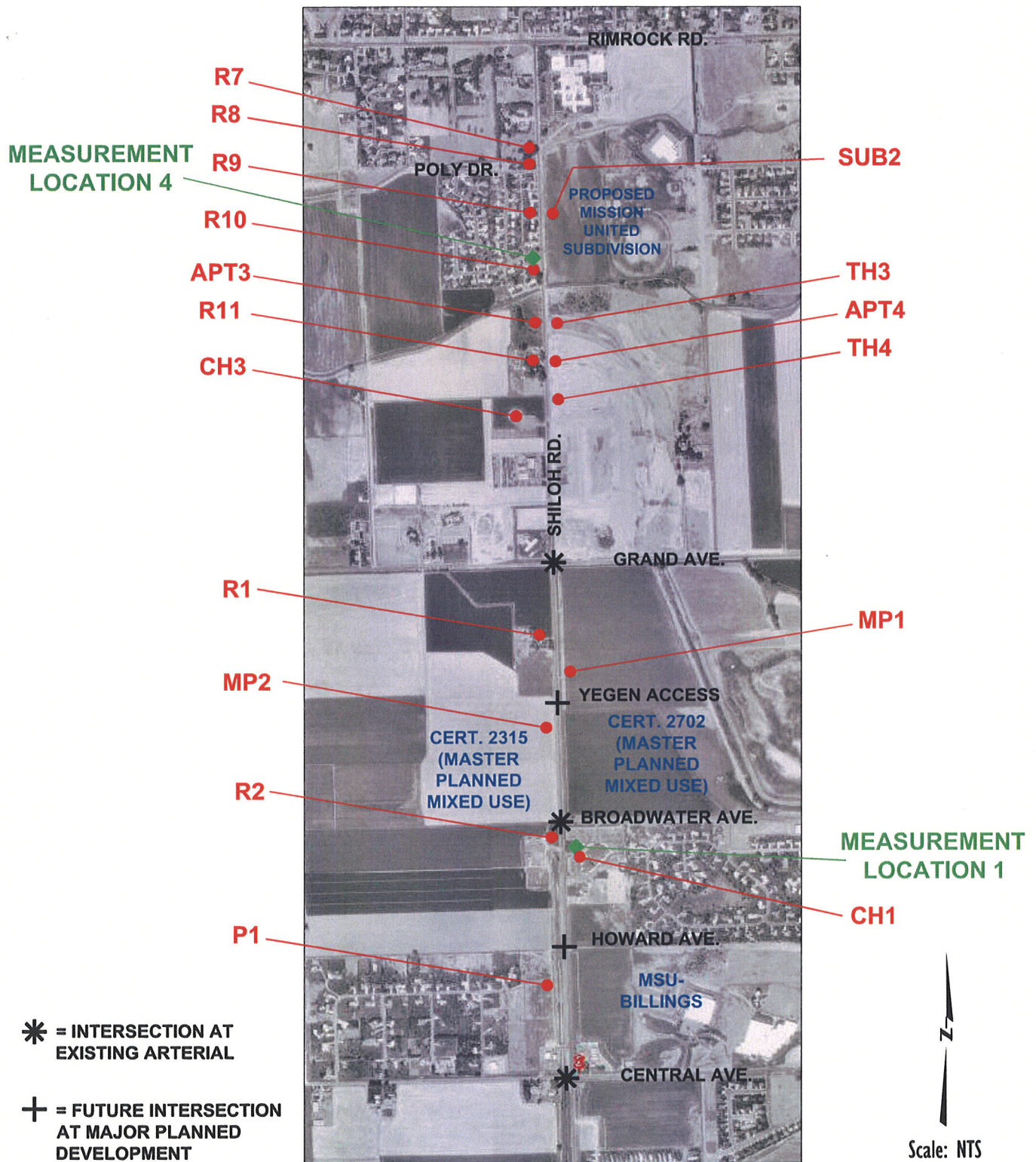


Table 2 Predicted Traffic Noise Levels (cont.)

Receptor	Description	Approximate Distance to New and Existing Centerline (meters/feet)	No-Build Alternative L <sub>eq</sub> (h), Present Year 2002 (dBA)	No-Build Alternative L <sub>eq</sub> (h), Design Year 2027 (dBA)	Build Alternative - 7 Traffic Signals L <sub>eq</sub> (h), Design Year 2027 (dBA)	Build Alternative - 7 Traffic Signals L <sub>eq</sub> (h), Design Year 2027 (dBA)	Build Alternative - 11 Traffic Signals L <sub>eq</sub> (h), Design Year 2027 (dBA)	Build Alternative - 11 Roundabouts L <sub>eq</sub> (h), Design Year 2027 (dBA)
MT Sapphire Road to JTL Access								
P2	Sharptail Area	50 m/164 ft	57	63	66	66	66	65
JTL Access to Hesper Road								
R4	Represents two single-family residences: #3949 Estate Place and #3945 Estate Place	50 m/164 ft	57	63	66	66	66	66
R5	Single-family residence: #3945 Estate Place	35 m/115 ft	60	66	69	69	69	69
CH2	New Life Church	45 m/148 ft	58	64	67	67	67	67
S2	Yellowstone Baptist College	45 m/148 ft	58	64	67	67	67	66
R6	Single-family residence: #3929 Hesper Road	80 m/263 ft	54	59	63	61	63	61
Hesper Road to Zoo Drive								
SUB1	Rager Subdivision - Proposed	24.4 m/80 ft	64	69	72	71	72	71
South of Zoo Drive								
ZOO	Zoo/Montana outdoor exhibit area	155 m/509 ft	53	56	58	58	58	58

Source: Traffic Noise Study (BSA, 2006)

Notes: 1. Shaded cells indicate that the predicted traffic noise level meets or exceeds the traffic noise impact criterion (66 dBA).



APPROXIMATE MEASUREMENT & RECEPTOR LOCATIONS:  
RIMROCK ROAD TO CENTRAL AVENUE

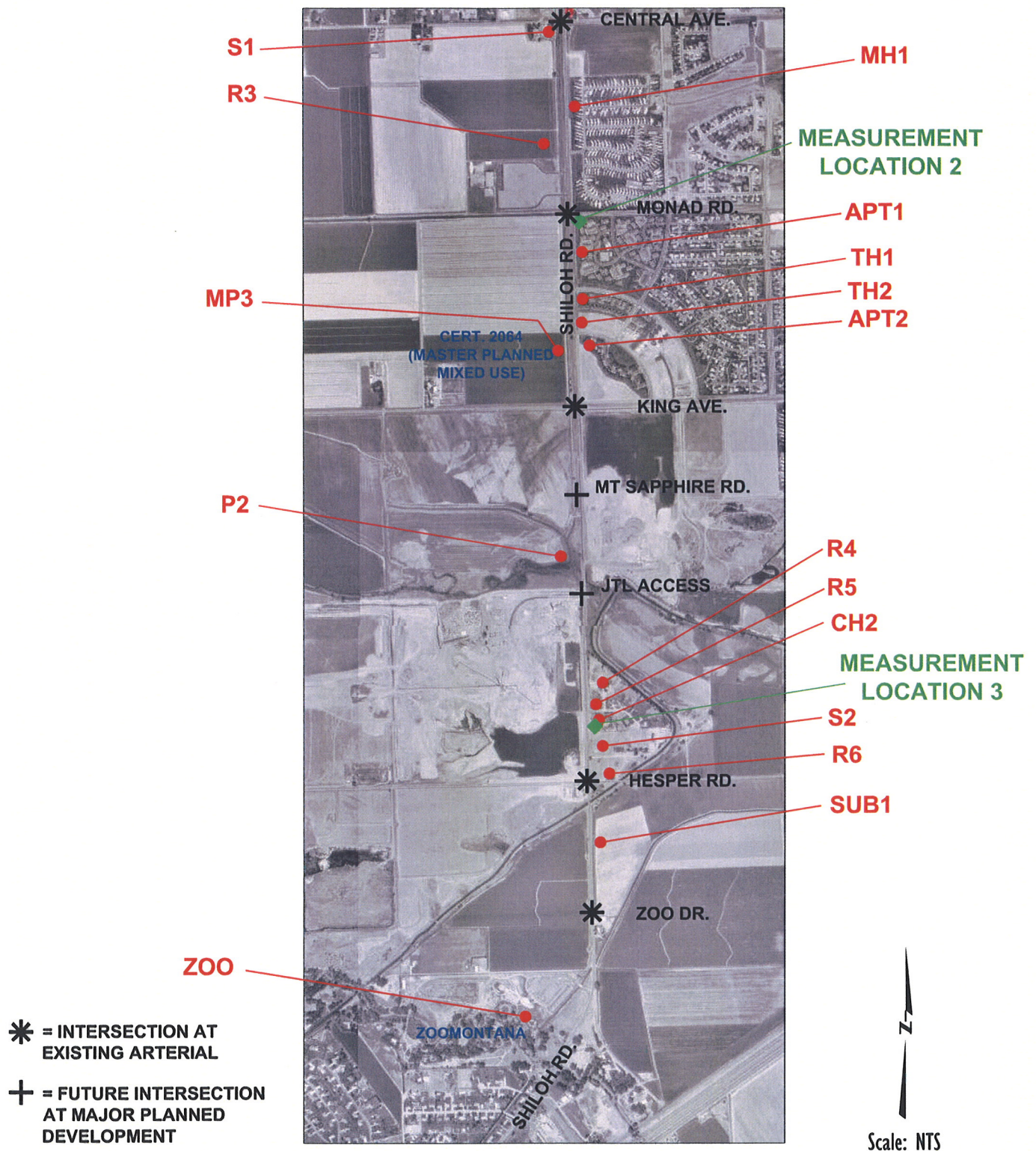
Shiloh Road Traffic Noise Study Addendum

Big Sky Acoustics, LLC

FIGURE

I





APPROXIMATE MEASUREMENT & RECEPTOR LOCATIONS:  
CENTRAL AVENUE TO ZOOMONTANA

Shiloh Road Traffic Noise Study Addendum

Big Sky Acoustics, LLC

FIGURE  
2

## Appendix F      Cultural Resources



2006081002



Montana Department of Transportation

2701 Prospect Avenue  
PO Box 201001  
Helena, MT 59620-1001

Jim Lynch, Director  
Brian Schweitzer, Governor

August 9, 2006

**CONCUR  
MONTANA SHPO**

DATE 23 Aug 06 SIGNED [Signature]

Mark Baumler, Ph.D.  
State Historic Preservation Office  
1410 8<sup>th</sup> Avenue  
P O Box 201202  
Helena, MT 59620-1202

Subject: STPU 1031(2)  
Shiloh Road Corridor - Billings  
Control No. 4666

BY: SHPO

**RECEIVED**

**AUG 25 2006**

**ENVIRONMENTAL**

Dear Mark:

Enclosed is the Determination of Effect for the above project in Yellowstone County. We have determined that the proposed project would have **No Effect** to the NRHP-eligible Big Ditch (24YL664) and Yegen Bunkhouse (24YL1559), while it would have **No Adverse Effect** to the Billings Bench Water Association Canal (24YL161) and the Snow Ditch (24YL1563) for the reasons specified in the document. We request your concurrence.

If you have any questions, please contact me at 444-6258.

[Signature]  
Jon Axline, Historian  
Environmental Services

Enclosure

cc: Bruce Barrett, Billings District Administrator  
Tom Martin, P.E., Consultant Design  
Bonnie Steg, Resources Section

## **DETERMINATION OF EFFECT**

### **STPU 1031(2) Shiloh Road Corridor – Billings Control No. 4666**

#### **Introduction**

The Montana Department of Transportation (MDT) intends to reconstruct and widen Shiloh Road in Billings, Montana. The project begins at Milepost 0.996 (intersection of Grand Avenue) and proceeds northerly 3.779 miles to Milepost 4.775 (the north end of the Canyon Creek Bridge) on Shiloh Road (U 1031) in Billings. The existing road was constructed under two projects beginning in 1956. Other than routine maintenance and the construction by Yellowstone County of a bridge over the Billings Bench Water Association Canal (24YL161) in 2000, there have been no significant modifications to roadway. The existing roadway varies between 25 and 31-feet in width throughout the project area. Figure 1 shows the project area.

The Shiloh Road Corridor project would follow the existing alignment with some modifications to correct poor sight distances or substandard curves. There are four alternatives being considered for the major intersections along the route, including signals and roundabouts. Generally, however, it is the intent of the project to widen the roadway to a 52-foot driving surface consisting of four lanes, center medians, deceleration lanes, sidewalks, and an adjacent multi-use path. Additional Right-of-Way (R/W) would be required for this project.

#### **Significant Cultural Resources**

A cultural resource survey of the project area was conducted in 2002 and 2003. The MDT and the Montana State Historic Preservation (SHPO) concurred in the National Register of Historic Places (NRHP) eligibility of four historic sites: Billings Bench Water Association Canal (24YL161), the Yegen Bunkhouse (24YL1559), the Yegen Farmstead (24YL1560), and the Big Ditch (24YL664). On February 28, 2006, SHPO concurred with the MDT determination that the Yegen Farmstead (24YL1559) was no longer eligible for the NRHP after the property owner demolished seven of the fifteen buildings and structures on the site. The owner demolished the features to make way for a commercial and residential development on his property bordering on Shiloh Road. Consequently, 24YL1560 will not be considered further in this document.

The Billings Bench Water Association Canal (24YL161) was constructed in 1904 and consists of a 63 mile long main canal and associated laterals, field ditches and drains. The canal is eligible for the NRHP under Criterion A.

Approximately 400-feet of the Big Ditch is located within the Area of Potential Impact for this project. Built in 1882-1883 by the Northern Pacific Railway's Minnesota & Montana Land & Irrigation Company, the ditch was significant to the development of the Yellowstone Valley and the City of Billings. The Big Ditch is eligible for the NRHP under Criterion A.

The Yegen Bunkhouse site (24YL1559) consists of two features at the corner of Shiloh Road and Broadwater Avenue. The feature originated as a schoolhouse that was moved to its existing

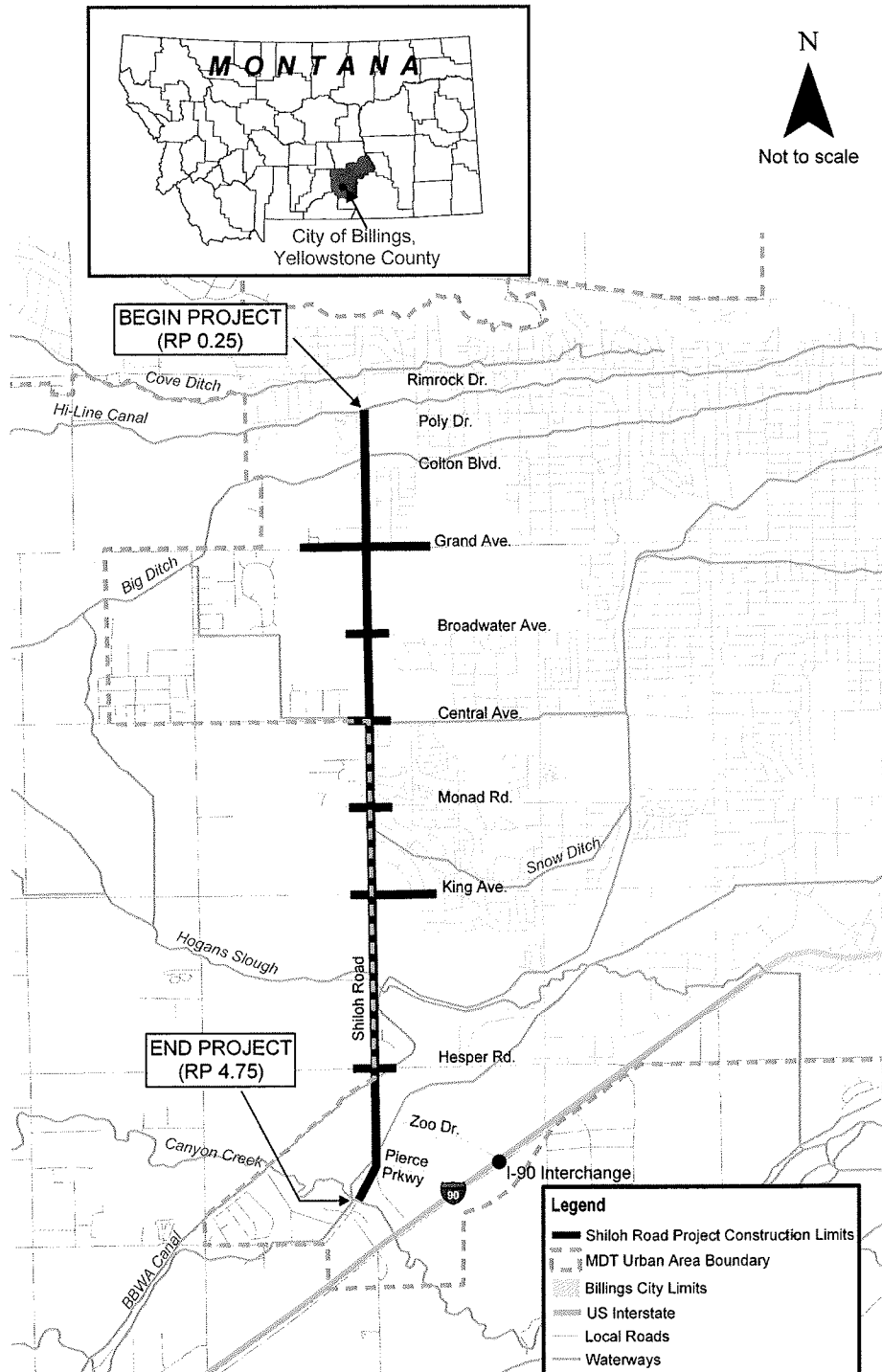


Figure 1. Map showing the location of the MDT's Shiloh Road Corridor – Billings project.

location and converted into a bunkhouse in the 1930s. The second feature is a concrete outhouse foundation. The Yegen Bunkhouse is eligible for the NRHP under Criterion C as a good example of a Great Depression-era migrant beet workers shelter.

The Snow Ditch (24YL1563) was constructed in 1907 and was incorporated as a lateral into the Big Ditch (24YL664) system shortly thereafter. The Snow Ditch is eligible for the National Register under Criterion A for its significance to the agricultural development of the Yellowstone Valley.

### **Project Impact**

A preliminary design of the Shiloh Road Corridor – Billings project has been completed and a copy of the plans in the vicinity of the historic sites is attached (Figures 2-8).

The MDT is considering two alternatives that would have a direct bearing on the BBWA Canal (24YL161). Alternative 1 (Figure 2) would include a signalized existing intersection (Shiloh Road and Hesper Road) approximately 500-feet north of the BBWA Canal crossing, while Alternative Two (Figure 3) consists of a potential roundabout located at that intersection. The existing canal bridge would be perpetuated. The project would include, however, the construction of a new multi-use path bridge across the canal west (upstream) of the existing bridge. With both alternatives, all work would be confined to the existing easement. Under both alternatives, new footings would be constructed atop the existing ditch embankment to accommodate the structure. There would be no piers or other bridge-related structures within the bed of the canal. There would be some grading of the embankment at the site to accommodate the proposed bridge. The grading would consist of about 0.02 acres under both proposed alternatives. Under both alternatives, the distance (boulevard) between the approach multi-use path and the roadway and bridge would either be eliminated (Alternative One) or reduced to about 2-feet (Alternative Two). The project could also include the concrete lining of the canal underneath the bridges and for a distance of 10-feet up and downstream of the structures.

The City of Billings and the Big Ditch Company enclosed the Big Ditch (24YL664) in 2000 where it is located within the Area of Potential Effect for this project. The ditch enters a culvert 246-feet west of Shiloh Road and emerges from it 289-feet east of the road. The exposed areas of the ditch are not located within the impact area of the project (Figure 4).

The MDT is also considering two alternatives at the intersection of Shiloh Road and Broadwater Avenue where the Yegen Bunkhouse (24YL1559) is located: a Traffic Signal Alternative (Figure 5) and a Roundabout Alternative (Figure 6). The bunkhouse site faces south onto Broadwater. Shiloh Road would be widened to 52-foot and the intersection brought up to current design standards. Under the signal alternative, Broadwater Avenue would not be widened or significantly although sidewalks would be installed adjacent to the existing roadway. The proposed construction limits in proximity to the site would be kept within the proposed R/W, which would be reduced to 9.8-feet from the pavement edge to match the existing boundary for the bunkhouse site. No additional R/W would be required at the site and the construction activities would not encroach on the property. The proposed roundabout would be shifted about 8.2-feet to the west and approximately 15-feet to the south in order to minimize impacts to the Yegen Bunkhouse. The alignment north and south of the Broadwater Avenue intersection would



be shifted away from the site to accommodate the roundabout. There would be some modification of Broadwater Avenue also to accommodate the roundabout. The MDT would install a retaining wall between the back of the proposed sidewalk (which would be narrowed to meet minimum ADA standards) and the southwest corner of the site. The proposed R/W and construction limits would be restricted to the retaining wall and would not encroach on the historic property. There would be no physical encroachment on the site boundaries.

The Snow Ditch (24YL1563) crosses Shiloh Road at the Central Avenue intersection. Approximately 1,800-feet of the 252-mile ditch system is located within the Area of Potential Effect for this proposed project. The ditch runs under the intersection in a culvert. The Traffic Signal Alternative (Figure 7) would result in about 1,755-feet of linear impacts to the ditch. About 180-feet on the west side of Shiloh Road would be placed in a culvert and 1,033-feet on the east side of the roadway would be impacted, including 82-feet placed in a culvert. The remaining 1,493-feet would involve grading impacts to the facility. An existing diverse structure (age indeterminate) would be relocated from its current site at the southeast of the intersection to the southwest corner of the intersection. A small pump house located at the southeast corner of Shiloh Road and Central Avenue would need to be relocated. It is not known if the pump house is of historic age. The Roundabout Alternative would include about 1,230-feet of linear impacts to Snow Ditch. This would include 541-feet on the west side of Shiloh Road (of which 295-feet would be placed in a culvert) and 689-feet on the east side of Shiloh Road (148-feet placed in a culvert). The remaining 492-feet would consist of grading impacts. The impacts to the diversion structure and the pump house would be same as under the Traffic Signal Alternative.

### **Project Effect**

There would be **No Adverse Effect** to the NRHP-eligible Billings Bench Water Association Canal (24YL161) as a result of both alternatives of the proposed project. The existing alignment of the canal would be perpetuated as would its existing width; there would be no change in the carrying capacity of the canal and its historic function providing water for irrigation in and around Billings would remain unchanged. Although there would be some grading on the embankment west of the existing bridge, it constitutes 0.04 acre and would not detract significantly from the appearance of the facility. While the ditch company may require the MDT to line approximately 102-feet of the ditch, this constitutes less than one percent of the 63-mile long canal. Other sections of the canal, however, are lined with concrete in Billings and in Billings Heights. There would be no change in the setting of the site by the addition of the multi-use bridge. Ten years ago Shiloh Road was a north-south road that traversed an area mostly used for agriculture with a few residential subdivisions. Within the last decade, residential and commercial development along Shiloh Road has boomed creating an environment that is no longer dominated by agriculture, but by modern businesses and residences. The multi-use bridge is intended to facilitate an increasing amount of pedestrian and bicycle traffic along Shiloh Road and to improve safety by taking off the main road onto an adjacent bicycle/pedestrian path.

There would be **No Effect** to the NRHP-eligible Big Ditch (24YL664) as a result of the proposed project. In 2000, the City of Billings and the ditch company enclosed approximately 535-feet of the ditch into an underground pipe that now carries it under Shiloh. The open portions of the ditch are no located well outside the Area of Potential Effect for this project and would not be



impacted by any construction activities associated with the proposed Shiloh Road project.  
Culvert part of road, not part of ditch

There would be **No Effect** to the Yegen Bunkhouse (24YL1559) under the proposed Traffic Signal and Roundabout alternatives. The general existing configuration of the intersection of Shiloh Road and Broadwater Avenue would be perpetuated, although there would be modifications based on the addition of ADA accessible sidewalks and the slight realignment of the roadway under the roundabout alternative to minimize the impacts to the bunkhouse. To minimize impacts to the NRHP-eligible property at the northeast corner of the intersection, the MDT would pull in the construction boundaries and the proposed R/W so that they do not encroach on the bunkhouse's site boundaries. A retaining wall would be installed under the roundabout alternative to further minimize the impacts of the structure. There would be no physical encroachment on the property and construction activities would not physically impact the structure or its immediate surroundings. The setting of the property has already been significantly impacted by continuing development on the area, including the Faith Chapel across Broadwater Avenue to the south and the Deaconess Billings Clinic across Shiloh Road to the southwest. This project has been developed to accommodate the already existing commercial expansion of the roadway and will not accelerate that process. The proposed project would not result in the abandonment of the Yegen Bunkhouse as it is an integral part of the Yegen Farms operation at this site. None of the Criteria for Adverse Effect apply to the Yegen Bunkhouse under the two alternatives proposed for this project.

There would be **No Adverse Effect** to the NRHP-eligible Snow Ditch (24YL1563) as a result of both proposed alternatives of the proposed project. The proposed modifications to the ditch at the intersection of Shiloh Road and Central Avenue would constitute at most 1,755-feet of the 252-mile ditch system (the Snow Ditch is part of the Big Ditch system). The work would include placing either 262-feet (Traffic Signal Alternative) or 443-feet (Roundabout Alternative) in a culvert with the remaining impacts caused by grading. There would be no significant change in the general alignment of the facility and its function would not be diminished or otherwise impaired by the projected work to it. The ditch already passes under the intersection through a culvert. The ditch's location paralleling Central Avenue would also be perpetuated as would its existing capacity. There would be no significant change in the setting of the property as the majority of it lies outside the Shiloh Road corridor. The existing pump house is likely not historic (research conducted failed to arrive at an approximate age for the structure) and the diversion structure likely dates to the late 1950s or 1960s. The site would not be abandoned or neglected because of the proposed project and its historic function as an irrigation ditch would be perpetuated. Although there would be some grading and culvert impacts to the ditch, the general alignment would be maintained and would constitute a very small percentage of the entire Big Ditch/Snow Ditch system. The setting of the property in the vicinity of the project area has already been compromised by the continuing residential and commercial development in the area over the last ten years. None of the Criteria of Adverse Effect would apply in this case under both proposed alternatives.



Montana Department of Transportation

2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001

Jim Lynch, Director  
Brian Schweitzer, Governor

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FEB 21 2006

SHPO

REC'D MAR 06 2006

Stan  
MDT  
Shiloh Road  
Corridor -  
Billings

February 23, 2006

Stan Wilmoth, Ph.D.  
State Historic Preservation Office  
1410 8<sup>th</sup> Avenue  
P O Box 201202  
Helena, MT 59620-1202

Subject: STPU 1031(2)  
Shiloh Road Corridor - Billings  
Control No. 4666

Dear Stan:

It recently came to our attention that the owner of the Yegen Farmstead (24YL1560) made substantial alterations to his property along Shiloh Road in late January 2006. The changes involved the demolition of the seven of the fifteen historic buildings on the property (photographs attached). This included the residence, a cistern, garage, outhouse, shed, bunkhouse, and grain bin. With the exception of the grain bin (which was built in 1947), the other six features were built about 1925. Your office concurred with our July 2003 determination that the property was eligible for the National Register under Criteria B and C. The removal of the seven buildings and structures effectively removed the historic core of the property. Although the remaining features were also constructed between 1925 and 1940, they consist of a pump house, livestock shelter, granary, barn, machine shed, chicken coop, and two old railroad boxcars, they do not make up for the loss of the seven features, including the residence. Consequently, the loss of integrity and association with Peter Yegen Jr. has rendered the site ineligible for the National Register of Historic Places.

This action was taken by the property owner without the prior knowledge of the MDT and was done to accommodate the commercial and residential development of his property along the Shiloh Road corridor. The MDT's proposed project may have influence the owner's decision, but we did not encourage him to demolish the buildings. Indeed, the MDT had designed preliminary alternatives that would have avoided or minimized impacts to the property by the proposed project (attached). Unfortunately, this kind of thing occasionally happens, but it was not at the instigation of the MDT, but was the sole responsibility of the property owner.

If you have any questions, please contact me at 444-6258.

*Jon Axline*  
Jon Axline, Historian  
Environmental Services

CONCUR  
MONTANA SHPO

DATE 2/28/06 SIGNED [Signature]

Attachments

*serving you with pride*

*Cultural Resources*

Montana Department of Transportation

2701 Prospect Avenue

Helena, MT 59626

Brian Schweitzer, Governor

**MASTER FILE RECEIVED**  
**COPY**

MAR 1 2005

February 8, 2005

**ENVIRONMENTAL**

Mark Baumler, Ph.D.  
State Historic Preservation Office  
1410 8<sup>th</sup> Avenue  
P O Box 201202  
Helena, MT 59620-1202

Subject: STPU 1031(2)  
Shiloh Road Corridor  
Control No. 4666

**RECEIVED**  
FEB 10 2005  
BY: \_\_\_\_\_

**CONCUR**

2/10/05

*Greg Warburton*

*Josef MDT Shiloh Road*

Dear Mark:

Enclosed is the cultural resource report, CRABS, and site forms for the above project in Yellowstone County. Ethnoscience recorded six historic properties within the designated survey area. Of those, the Big Ditch (24YL664) was previously determined eligible for the National Register of Historic Places. Ethnoscience recommends the remaining five sites ineligible for the National Register. We agree with that recommendation and request your concurrence.

If you have any questions, please contact me at 444-6258.

*Jan Axline*  
Jan Axline, Historian  
Environmental Services

Enclosure

cc: Bruce Barrett, Billings District Administrator  
Tom Martin, P.E., Consultant Design  
Bonnie Steg, Resources Section

2003071404

**Montana Department of Transportation**2701 Prospect Avenue  
PO Box 201001  
Helena MT 59620-1001David A. Galt, Director  
Julie Martz, Governor

July 11, 2003

Mark Baumler, Ph.D.  
State Historic Preservation Office  
1410 8<sup>th</sup> Avenue  
P O Box 201202  
Helena, MT 59620-1202Subject: STPU 1031(2)  
Shiloh Road Corridor  
Control No. 4666


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AUG - 1 2003

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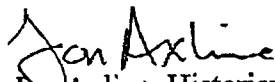
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BY: \_\_\_\_\_

CONCUR  
MONTANA SHPODATE 7/14/03 SIGNED 

Enclosed is the cultural resource report, CRABS, and site forms for the above project in Yellowstone County. Ethnoscience recommended two previously unrecorded sites eligible for the National Register of Historic Places. They are: the Yegen Bunkhouse (24YL1559) and the Yegen Ranch (24YL1560). We agree with those recommendations and request your concurrence. In addition to the above sites, the BBWA Canal (24YL16/1382/1532) was previously determined NRHP eligible and the Snow Ditch (24YL1563) is covered under the terms of a programmatic agreement and no determination of NRHP eligibility is required.

If you have any questions, please contact me at 444-6258.

  
Jon Axline, Historian  
Environmental Services

Enclosures

cc: Bruce Barrett, Billings District Administrator  
Carl Peil, P.E., Preconstruction Bureau  
Bonnie Steg, Resources Section  
John Walsh, Yellowstone County Historic Preservation Officer w/attach.

### Cultural Resource Inventory

Site Number	Name	Description	NRHP Eligibility	Data Source
24YL161/ 1382/1532	BBWA Irrigation Canal	The canal was constructed in 1904 as a result of the Carey Land Act of 1895 that provided government support for the development of irrigation systems to be used for farming.	Recommended eligible under criterion A.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL171	Canyon Creek Irrigation Ditch	The ditch was constructed by the Yellowstone and Canyon Creek Ditch Company in 1886.	Not eligible.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL890 Update	Farmstead	This farmstead dates to circa 1915-1920 featuring nine structures including a house, two bunkhouses, two sheds, a machine shed, a cattle shed, a chicken coop, and a pole shed.	Not eligible.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL1559	Bunkhouse	This site consists of two features: a Depression Era migrant sugar beet laborer bunkhouse and an outhouse foundation. The bunkhouse is a former school. Constructed in 1920.	Recommended eligible under criterion C.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL1560	Farmstead	Example of 1920s diversified farmstead architecture, featuring 15 structures including a house, a bunkhouse, a barn, livestock shelters, a pumphouse and two boxcars.	Not eligible*.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL1561	School	This site is the former Shiloh school, which is now used as a photography studio.	Not eligible.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL1562	Farmstead	This site consists of five features including a house, two garages, a barn, and a boxcar.	Not eligible.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• SHPO Concurrence July 29, 2003</li> </ul>
24YL1563	Snow Ditch	This site consists of an unlined irrigation ditch, which is technically classified as a lateral of the Big Ditch, from which it draws all of its water.	Recommended Eligible under criterion A.	<ul style="list-style-type: none"> <li>• 2003 Cultural Resources Inventory (Ethnoscience)</li> <li>• MDT Letter of May 24, 2006 regarding STPHS 1013(3) Shiloh/Monad Turn-Bay</li> </ul>

**Cultural Resource Inventory (continued)**

Site Number	Name	Description	NRHP Eligibility	Data Source
24YL664/2 4ST296	Big Ditch Canal	Site consisting of modified remains of the Big Ditch Canal where it crosses Shiloh Road from west to east.	Recommended eligible under criterion A.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>
24YL1586	1918 Shiloh Road (historic homesite)	House built in 1903 with a recently constructed garage.	Not eligible.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>
24YL1587	2004 Shiloh Road (historic homesite)	House and garage built in 1950.	Not eligible.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>
24YL1588	2012 Shiloh Road (historic homesite)	Vacant commercial structure built in 1940.	Not eligible.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>
24YL1589	2206 Shiloh Road (historic homesite)	House built in 1953.	Not eligible.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>
24YL1590	2316 Shiloh Road (historic homesite)	House built in 1956.	Not eligible.	<ul style="list-style-type: none"> <li>2004 Cultural Resources Inventory (Ethnoscience)</li> <li>SHPO Concurrence February 22, 2005</li> </ul>

Source: Compiled by David Evans and Associates, Inc., 2006

\* In January 2006, the property owner of the NRHP-eligible farmstead site (24YL1560) removed seven of the 15 structures comprising that site including the farmhouse. Jon Axline, MDT Historian, determined that the loss of integrity and association with Peter Yegen Jr. rendered the site ineligible for the NRHP. SHPO concurred with this determination on February 28, 2006 (See letter in Appendix F).



## Appendix G      Public Involvement Materials







July 18, 2006

FOR IMMEDIATE RELEASE

For more information:

Bruce Barrett, MDT District Administrator, (406) 252-4138

Kirk Spalding, Engineering Inc., (406) 656-5255

Paul Grant, Public Involvement, (406) 444-9415

### **Final alternatives for the Shiloh Road corridor are ready for review**

The Montana Department of Transportation (MDT) is holding the third public meeting for the Shiloh Road Corridor Environmental Assessment (EA) on Wednesday, July 26, 2006. Personnel from MDT and the project consultant team will be available to answer questions and take comments between 7:00 and 9:00 pm, with a presentation at 7:15 pm. The open house meeting will be held at the Faith Evangelical Church, 3145 Sweetwater Drive, (south of Central Avenue on 32<sup>nd</sup> Street West) Billings.

The goal of the Shiloh Road project is to develop a preferred alternative for implementation of improvements in the Shiloh Road Corridor that improve safety and travel efficiency and considers the context of the Shiloh Road Corridor community.. Elements that will be considered in the alternatives include roadway, pedestrian and bicycle facilities as well as design treatments, such as lighting and landscaping

The purpose of this meeting is to present the current status of the project, the final alternatives to be assessed in the EA, and obtain input from the public. Please plan to attend and provide your input on this project. Community participation is a very important part of development of an EA, and the public is encouraged to attend. Opinions, comments and concerns may also be submitted in writing at the meeting, by mail to MDT District Administrator Bruce Barrett at MDT's Billings district office at PO Box 20437, Billings MT 59104-0437, or online at [www.shilohroadcorridor.com/comments.htm](http://www.shilohroadcorridor.com/comments.htm), noting comments are for project CN4666.

People may sign up to receive project updates and newsletters by contacting Suzanne Savage at 720-946-0969 or online at the web address listed above.

MDT attempts to provide accommodations for any known disability that may interfere with a person's participation in any service, program or activity of our department. If you require reasonable accommodations to participate in this meeting, please contact Suzanne Savage of David Evans and Associates at 720-946-0969 or [srsa@deainc.com](mailto:srsa@deainc.com) at least two days before the meeting. For the hearing impaired, the TTY number is (406) 444-7696 or 1-800-335-7592, or call Montana Relay at 711. Alternative accessible formats of pertinent information will be provided upon request.

-----end-----

Project name: Shiloh Road Corridor - EA  
Project ID: STPU 1031(2)  
Control Number 4666  
Yellowstone County

# PUBLIC MEETING

The Montana Department of Transportation invites you to participate in an open house to discuss the **Shiloh Road Corridor Environmental Assessment (EA)**. The EA will develop and analyze alternatives for the future reconstruction of Shiloh Road from Canyon Creek Bridge to Poly Drive.

The purpose of this meeting is to present the project status, final alternatives to be assessed in the EA, and obtain input from the public on these alternatives. The meeting will start with a brief presentation followed by the opportunity to review the final alternatives and speak with the project team about which alternatives offer the best solutions for the future of this corridor.

For more information or to be placed on the project mailing list please contact Bruce Barrett, District Administrator, PO Box 20437, Billings, MT 59104, 406-252-4138. MDT attempts to provide accommodations for any known disability that may interfere with a person's participation in any service, program or activity of our department. If you require reasonable accommodations to participate in this meeting, please call Suzanne Savage at (720) 946-0969 at least two days before the meeting. For the hearing impaired, the TTY number is (406) 444-7696 or 1-800-335-7592, or call Montana Relay at 711. Alternative accessible formats of pertinent information will be provided upon request.

**Wednesday, 7:00 PM**

**July 26, 2006**

**Faith Evangelical Church  
3145 Sweetwater Drive, Billings**



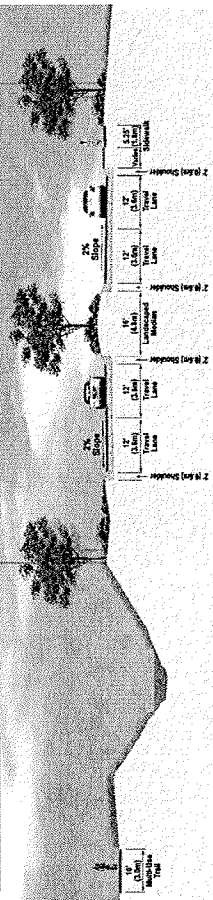
## Public Meeting Review Final Alternatives for the Shiloh Road Project

**Faith Evangelical Church**  
3145 Sweetwater Dr., Billings  
7:00 pm - 9:00 pm  
7:15 Presentation

The purpose of this public meeting is to present the project status, review the final alternatives being assessed, and obtain input from the public on the final alternatives. The project team has developed the final alternatives based on input from the January 25, 2005 public meeting, corridor stakeholders, the City, the County, and the Project Advisory Committee. Please join us to review the final alternatives and the project process to date.

MDT attempts to provide accommodations for any known disability that may interfere with a person's participation in any service, program or activity for our department. If you require reasonable accommodations to participate in this meeting, please contact Suzanne Savage at 720-946-0969 or srs@deainc.com at least two days before the meeting. For the hearing impaired, the TTY number is 406-444-7696 or 1-800-335-7592, or call Montana relay at 711.

Urban Typical Section



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## Thank You for Your Comments!

Attendees at the January 2005 public meeting provided input on the preliminary alternatives for the Shiloh Road Corridor. The comments received were very useful and are included in the public meeting summary available on the project website [www.shilohroadcorridor.com](http://www.shilohroadcorridor.com). Based on these comments and input from various corridor interest groups, the project team has refined the preliminary alternatives to address the future traffic and access needs along the corridor. The alternatives include considerations for the corridor typical section, access management, intersection control, and design treatments.

### Final Alternatives - Typical Section

The last public meeting focused on the elements of the corridor typical sections (roadway, pedestrian, bicycle, and design treatments) as well as intersection improvement options. The corridor typical sections included an urban typical section (with raised medians and curb and gutter) and a rural typical section (with depressed medians and drainage ditches). After consideration of all the public and agency input and the technical evaluation of the typical sections, the project team has recommended carrying forward only the urban typical section in the final alternatives. Due to the additional width required for the rural typical section, the rural alternatives were found to cost more and have greater impact on adjacent properties and businesses as well as natural resources. In addition, the rural typical section does not reflect the future character of the corridor, which is planned for residential and commercial development. For these reasons, the rural typical section was eliminated and the final alternatives summarized on page 3 include the urban typical section as described below.

### Urban Typical Section Elements

- Roadway**
  - Right-of-way approximately 110'
  - One or two travel lanes in each direction
  - 2'-wide paved shoulder on both sides (no parking provided)
  - Raised center median with curbs and landscaping
  - Drainage via curb and gutter (roadside ditch south of Hesper Road)
- Pedestrian/Bicycle**
  - 5.3'-wide sidewalk on one side
  - 10'-wide multi-use path on one side
- Design Treatment**
  - Lighting
  - Landscaping

## Project Background and Process

Project Initiation and Scoping	Public Meeting #1 – January 30, 2003 Agency coordination and stakeholder meetings
Alternatives Development	Traffic Modeling – Summer 2003 Alternatives Development – 2003/2004 Project Area Extension – Summer 2004 The original project limits were extended north from Grand Ave. to Poly Drive to correspond with the terminus of a City project on Shiloh Road. Because of financial constraints and other considerations, the City of Billings elected to reconstruct Shiloh Road only from Rumrock Road to Poly Drive. The City and MDT worked cooperatively to include the segment from Grand Ave. to Poly Dr. in this project. Update of Preliminary Project Alternatives for Extended Area – Fall 2004 Public Meeting #2 – January 25, 2005 Review of preliminary alternative typical sections and intersection control options.
Finalize Alternatives	Screening Evaluation of Preliminary Alternatives – Spring/Summer 2005 A range of corridor typical sections were evaluated in addition to various alternatives suggested from public and agency input. Refinement of Alternatives – 2005/2006 The project team refined the preliminary alternatives based on screening evaluation and to respond to the newly proposed development in the corridor. Public Meeting #3 – WE ARE HERE To finalize alternatives for evaluation.
Alternatives Evaluation	Evaluate Final Alternatives – Summer 2006 Identify a preferred alternative.
Prepare Environmental Document	Document Alternatives Evaluation in the EA – Summer/Fall 2006
Public Review and Comment Period for EA	EA Available for Public and Agency Review Public Hearing
Finding of No Significant Impact (FONSI)	FONSI - Finding of No Significant Impact Document alternative selected by MDT and FHWA for implementation if there are no significant impacts. If there are significant impacts, begin the process for an environmental impact statement (EIS). Completion of Environmental Process
Next Phases of Project	Final Design & Permitting → Right-of-Way Acquisition → Construction

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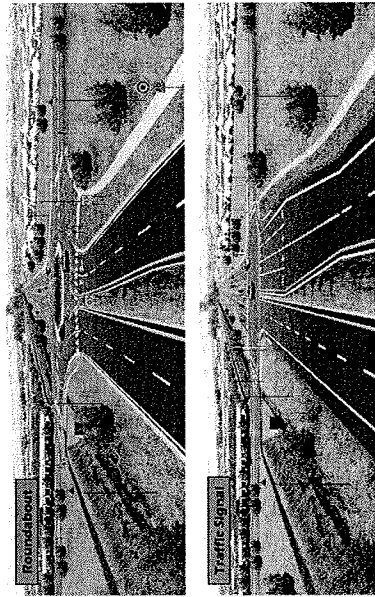
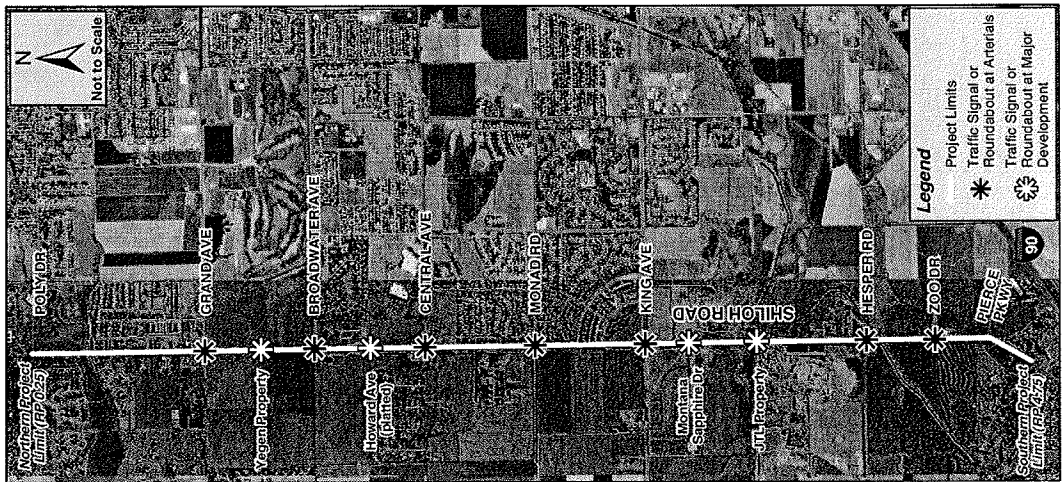
## Shiloh Road Corridor Alternatives

Since the January 2005 Public Meeting, additional development was identified in the corridor at several locations. Due to these additional planned developments and new information regarding the level of development planned for existing parcels in the Shiloh Road corridor, the traffic volumes projected for year 2027 at major intersections has increased between 10% and 50%. To better address traffic volumes along the corridor, given the change in corridor conditions, some of the intersection configurations proposed in the preliminary alternatives have been modified. These changes include additional turn lanes for signalized intersections and additional approach lanes for roundabouts. The final alternatives also include access improvements to accommodate proposed development in the corridor.

In addition to the No Build Alternative, the following four build alternatives are proposed for evaluation in the EA. As described on page 1, all of these alternatives would be designed with an urban typical section.

- Traffic Signals at Arterials
- Roundabouts at Arterials
- Traffic Signals at Arterials and Major Development
- Roundabouts at Arterials and Major Development

The first two alternatives will have intersection improvements at the seven arterial intersections (Zoo Drive, Hesper Road, King Avenue, Monad Road, Central Avenue, Broadwater Avenue, and Grand Avenue). The second two alternatives will have intersection improvements at eleven locations including the same seven major intersections and four additional locations with proposed major development. See the next page for a conceptual graphic depicting a typical intersection with a traffic signal or roundabout.



## NEIGHBOR TO NEIGHBOR

Would you like to arrange a meeting with MDT for your business, homeowner's association or small interest group? A Project Team member would be glad to speak with you. Please call 406-252-4138 and ask for Bruce Barrett, MDT Administrator District 5. Kirk Spalding at Engineering Inc. will also help at 406-656-5255. Please call with any questions or to be put on the mailing list.

You can also find information on the project website at:

[www.shilohroadcorridor.com](http://www.shilohroadcorridor.com)

1,100 copies of this publication were produced at an estimated cost of \$1.15 each for a total cost of \$1,265. Alternative accessible formats of pertinent information will be provided on request. For further information, contact Suzanne Savage at 720-946-0969 or [ssa@deaine.com](mailto:ssa@deaine.com). For the hearing impaired, the TTY number is 406-444-7696 or 1-800-335-7592, or call Montana relay at 711.



Bruce Barrett, District Administrator  
Montana Department of Transportation  
District 5  
424 Morey St.  
Billings, MT 59104-0437



Montana Department  
of Transportation

PO Box 201001  
Helena, MT 59620-1001

Judy Martz, Governor

FOR IMMEDIATE RELEASE

January 4, 2005

For further information, contact:

Bruce Barrett, MDT District Administrator, phone: 406-657-0210

John Robinson, MDT Public Affairs, phone: 406-444-9415

Kirk Spalding, Engineering Inc., phone: 406-656-5255

The Montana Department of Transportation (MDT) is holding the second meeting for the Shiloh Road Corridor Environmental Assessment (EA) on Tuesday, January 25, 2005. The open house meeting will be held at the Will James Middle School cafeteria, 1200 30<sup>th</sup> Street West, Billings, from 7:00 PM to 9:00 PM.

The purpose of this public meeting is to review the preliminary set of conceptual alternatives developed based on public input at the January 30, 2003 meeting. The meeting will commence with a brief presentation at 7:15. There will be officials from MDT and members of the project consultant team, led by Engineering, Inc., to talk with you. Community comments collected at this meeting will contribute to the refinement of the alternatives for the Shiloh Road corridor, which will be carried forward for detailed evaluation.

The northern construction limit of this project has been extended from Grand Avenue to Poly Drive and the analysis area extends from the Shiloh Interchange to Rimrock Road. The goal of the Shiloh Road project is to develop a preferred alternative for the future reconstruction of the Shiloh Road Corridor that improves safety and travel efficiency and considers the context of the surrounding community. Please plan to attend and provide your input on this project.

For more information or to be placed on the project mailing list please contact Bruce Barrett, District Administrator, PO Box 20437, Billings, MT 59104, 406-657-0210. To make special accommodations for persons with disabilities, please call (406) 444-7696 or TTY (800) 335-7592.

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Shiloh Road -EA  
STPU 1013(2)  
Control Number 4666



## Participate.

The Montana Department of Transportation (MDT) invites you to participate in an open house public meeting for the Shiloh Road Corridor Environmental Assessment (EA) project. The EA will develop and analyze alternatives for the future reconstruction of Shiloh Road from Canyon Creek Bridge to Poly Drive.

The purpose of this meeting is to identify roadway alternatives including design elements for the Shiloh Road Corridor.

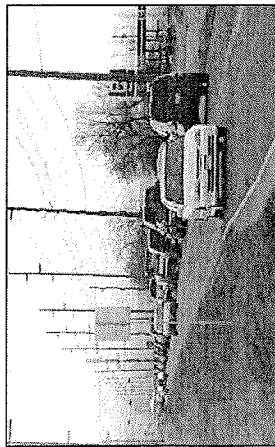
The meeting will commence at 7:00 PM with a brief presentation of the project status and progress since the first meeting at 7:15 PM. The remainder of the meeting will afford citizens the opportunity to review the conceptual alternatives and speak with the project team about which alternatives offer the best solutions for the future of the Shiloh Road Corridor.

**Tuesday, January 25, 2005**  
**Will James Middle School Cafeteria**  
**30th Street West, Billings**  
**7:00 PM - 9:00 PM**

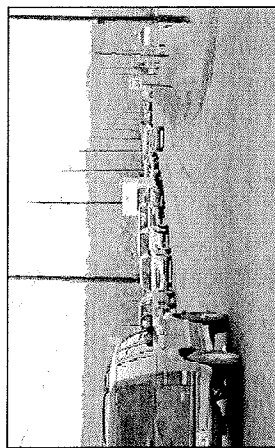
## Focus of Next Public Meeting: Identify Alternatives and Design Elements

Based on input from the public and the project advisory committee, the project team has developed several roadway and intersection alternatives as well as streetscape concepts that meet the design criteria described on page 3. These alternatives include a variety of options for medians, shoulder widths, pedestrian and bicycle facilities, lighting, and landscaping treatments. Please attend the next public meeting on January 25, 2005 to review these initial concepts and to identify additional concepts or issues that should be considered.

Please help us identify solutions for the future reconstruction of Shiloh Road at the January 25, 2005 public meeting!



Peak hour traffic on Shiloh Road.



Bruce Barrett  
Montana Department of Transportation  
District 5  
424 Morey St.  
Billings, MT 59104-0437



## Be Part of the Planning Process Contribute Your Ideas for Shiloh Road Improvements

### The Shiloh Road Corridor Project Area Has Been Expanded

The Montana Department of Transportation (MDT) has extended the project area to the north along Shiloh Road approximately 3/4 of a mile to Poly Drive. Improvements to this segment, which was previously proposed for reconstruction by the City of Billings, will now be analyzed in the Environmental Assessment being prepared by MDT for the Shiloh Road Corridor project.

### Public Meeting Review the Alternatives

Tuesday, January 25, 2005  
Will James Middle School  
Cafeteria  
7:00 PM - 9:00 PM  
7:15 PM Presentation

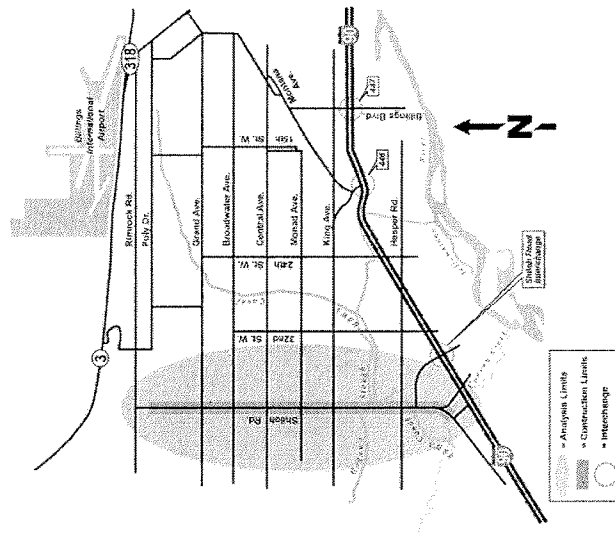
The purpose of this public meeting is to identify alternatives and design elements to be considered for improving the Shiloh Road Corridor. Several concepts have been developed based on public input from the January 30, 2003 meeting. Please join us to review these initial concepts and identify any other potential solutions. Together, we can identify the best alternatives for the future of Shiloh Road.

### NEIGHBOR TO NEIGHBOR

Do you want to know more about the project? A Project Team member would be glad to speak with you. Please call 406-252-4138 and ask for Bruce Barrett, MDT Administrator District 5.

Kirk Spalding at Engineering Inc. will also help, at 406-656-5255. Please call with any questions or to be put on the mailing list.

You can also find information on the project website at [www.shilohroadcorridor.com](http://www.shilohroadcorridor.com)



### Shiloh Road Corridor Study Area





## Summary of Public Meeting #1 held on January 30, 2003

The first public meeting for the Shiloh Road Corridor Environmental Assessment (EA) was held from 7:00 PM to 9:00 PM on January 30, 2003. Approximately 60 people attended the open house meeting. The project team presented information about the study to the public and gathered input on the community's ideas and expectations about the Shiloh Road Corridor.

Bruce Barrett, MDT District 5 Administrator, and other members of the project team were on hand to answer questions and discuss the specifics of the project. Mr. Barrett emphasized that the roadway design had not yet begun and that public input will play an integral role in the resulting corridor improvements.

### Project Advisory Committee

The PAC is a group that provides advice to the Shiloh Road project team on important local and regional issues along the Shiloh Road project corridor. The PAC represents a broad spectrum of public agency stakeholders and includes local officials, local agency representatives, and staff from city and county departments.

### Project Purpose

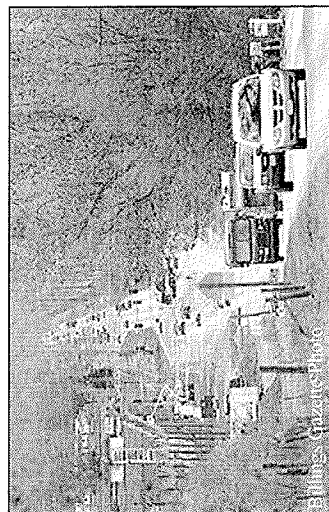
*Improve the mobility in the Shiloh Road Corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements.*

### Key Public Issues

- Aesthetics and landscaping
- Right-of-way impacts
- Design elements (roadway, pedestrian, bike)
- Flooding and drainage concerns
- Project funding
- Construction impacts

### Urban Design Survey

The public participated in a survey of urban design preferences. The survey included pictures of various landscaping and architectural treatments that could be implemented in the Shiloh Road corridor. Participants ranked these photos on how appropriate they were for the Shiloh Road corridor. The survey and the results can be viewed on the project website at [www.shilohroadcorridor.com](http://www.shilohroadcorridor.com) through the public meeting page.



## Framework for Development of Alternatives: Shiloh Road Design Criteria

The project team is working towards the development of a preferred alternative that will best satisfy the purpose and needs of this project. The purpose and needs for this project were refined based on input from the community during and since the first public meeting. The purpose of this project is to improve the mobility in the Shiloh Road Corridor by increasing roadway capacity and providing bicycle, pedestrian, and transit improvements. The needs include reducing congestion, improving safety, and providing multi-modal opportunities as well as meeting the objectives laid out in the West Billings Plan.

The comments received at the January 30, 2003 Shiloh Road Corridor public meeting have aided the project team in developing alternatives for the future of Shiloh Road. The project team has used the following design criteria to guide the preliminary development of alternatives. These criteria will also provide a framework for evaluating and screening the alternatives.

### Corridor Character

- Consider the goals and recommendations of the West Billings Plan.
- Design Shiloh Road as a Community Entryway Corridor.
- Incorporate landscaping into design of center medians.
- Incorporate grass, shrubs, and trees in roadside landscaping.
- Incorporate context-sensitive design concepts.
- Design sidewalks with pedestrian safety and enjoyment in mind.
- Separate pedestrian walkways from vehicular traffic with landscaped areas.
- Consider the objectives of the Shiloh Corridor Overlay District.
- Promote a unique, attractive, and distinctive entryway corridor to the community.
- Minimize adverse impacts from the transportation system on adjoining lands.

### Corridor Character cont.

- Minimize adverse aesthetic impacts associated with excessive lighting, signage, and other design features.

### Road Functionality

- Design facility to MDT Urban Design standards.
- Design facility to achieve a minimum of Level of Service C.
- Design access to the facility according to guidelines specified for intermediate classification areas in the MDT 1999 Access Management Project (Dye Management Group Inc.).
- Accommodate multi-modal users in the corridor (trucks, cars, motorcycles, pedestrians, bicyclists, etc.).

### Hydraulics

- Design the facility to ensure that it does not increase flooding problems associated with Hogan's Slough.



## **Participate.**

The Montana Department of Transportation (MDT) invites you to participate in an open house style public meeting for the **Shiloh Road Corridor** project.

The open house will be a hands-on meeting, in which the project team and citizens will sit down together to identify and discuss issues and concerns about the Shiloh Road Corridor.

The meeting will commence at 7:15 with a brief presentation to introduce the project. The remainder of the meeting will afford citizens the chance to speak with the project team about their concerns and expectations for the project.

**Thursday, January 30, 2003**  
**Will James Middle School**  
**Cafeteria**  
**30th Street West, Billings**  
**7:00 PM - 9:00 PM**

## Be Part of the Planning Process Contribute Your Ideas for Shiloh Road Improvements

### Open House Public Meeting

**Thursday, January 30, 2003**  
**Will James Middle School**  
**Cafeteria**  
**30th Street West, Billings**  
**7:00 PM - 9:00 PM**  
**Presentation at 7:15 PM**

You are invited to a public meeting to discuss the development of improvements to the Shiloh Road Corridor. The project team will present a project overview and gather information and comments from you. Your ideas and concerns will be used to develop new conceptual alternatives for roadway improvements. Please plan to attend this meeting and be a part of the planning process.

### Project Facts

#### **Project Name:**

Shiloh Road Corridor Environmental Assessment and Preliminary Design

#### **Project Location:**

Shiloh Road between Grand Avenue and Canyon Creek Bridge

#### **Project Length:**

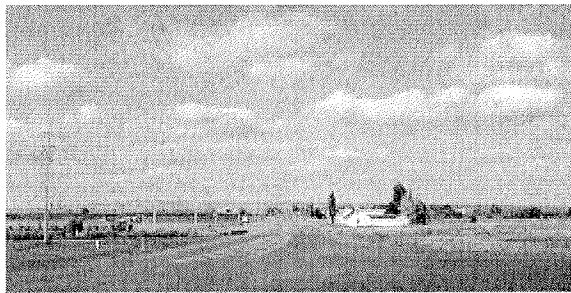
6.08 kilometers (3.78 miles)

#### **2001 Daily Traffic:**

8700 Average Daily Traffic (ADT)

### Shiloh Road Corridor Study Kicks Off!

The Montana Department of Transportation (MDT) invites the public to participate in the planning process for improvements to the Shiloh



Road corridor in Billings. The project limits include a 6.08 kilometer (3.78 mile) section of the Shiloh Road Corridor between Grand Avenue and the

Canyon Creek bridge. MDT will be conducting an Environmental Assessment (EA) to identify and evaluate the alternatives for improving this portion of Shiloh Road. The analysis limits for the EA extend from the Shiloh Road interchange to Rimrock Road (see map on reverse).

Safe and efficient travel is a main goal, however, it is equally important that the roadway design consider the design guidelines developed in the *West Billings Plan*. The corridor has been identified as a gateway to the community and MDT is committed to developing alternatives designed to fit the physical setting of the area in order to preserve and enhance the community's scenic, cultural, historic, environmental, and commercial resources. MDT has selected a consultant team, led by Engineering Inc., to perform the analysis and identify improvements.

### Want to find out more?

- Attend one of our upcoming public meetings
- Visit our project website at [www.shilohroadcorridor.com](http://www.shilohroadcorridor.com) to learn more about the project and to submit your comments to the project team.
- Get on the project mailing list. Contact Michael Sanderson at 406-656-5255 with your name and mailing address.

## NEIGHBOR to NEIGHBOR

Do you have any questions about the corridor study? A Project Team member would be glad to speak with you. Please call 406-657-0210 and ask for Bruce Barrett, MDT Administrator District 5. Michael Sanderson at Engineering Inc. will also help, at 406-656-5255. Please call with any questions or to be put on the mailing list.

### Contact Information:

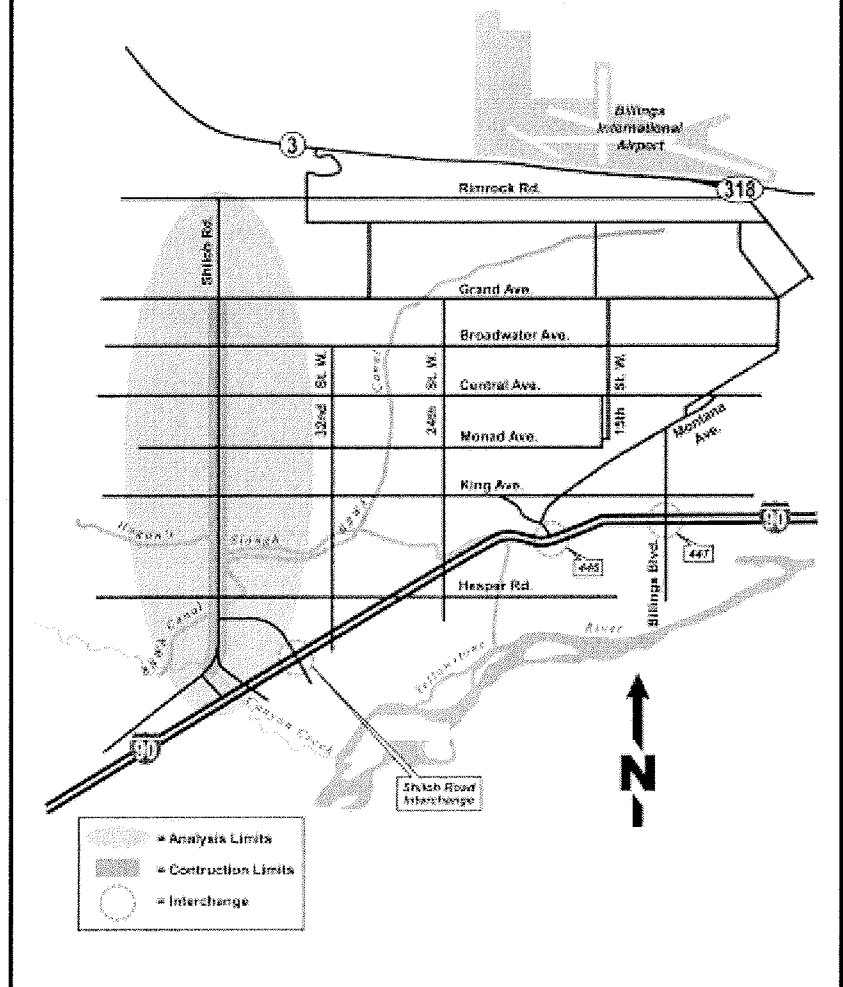
#### Primary Contact:

Bruce Barrett,  
Montana Department of Transportation,  
District Administrator  
424 Morey St.  
Billings, MT 59104-0437  
Phone: 406-657-0210  
Fax: 406-256-6487  
[bbarrett@state.mt.us](mailto:bbarrett@state.mt.us)

#### Prime Consultant:

Michael Sanderson,  
Engineering Inc.  
1001 S. 24<sup>th</sup> Street West  
Billings, MT 59108  
Phone: 406-656-5255  
Fax: 406-656-0967  
[msanderson@enginc.com](mailto:msanderson@enginc.com)

## Shiloh Road Project Location



Bruce Barrett,  
Montana Department of Transportation,  
District 5  
424 Morey St.  
Billings, MT 59104-0437



**SHILOH ROAD**  
CORRIDOR



FOR IMMEDIATE RELEASE

11-04-02

For further information, contact:

Bruce Barrett, MDT District Administrator, phone: 406-657-0210

John Robinson, MDT Public Affairs, phone: 406-444-9415

Michael Sanderson, Engineering Inc., phone: 406-656-5255

The Montana Department of Transportation (MDT) is planning to conduct an environmental assessment (EA) for the reconstruction of a portion of Shiloh Road in Billings. With the growth and development occurring in the west end of Billings, there is a need to improve this roadway to accommodate the increase in traffic.

MDT has selected a consultant team, led by Engineering Inc., to perform the analysis to identify improvements. As part of this study process, alternatives for transportation improvements in the Shiloh Road corridor will be identified.

MDT intends that the road improvements be designed to reflect the function of the corridor as an entryway into the Billings community and to accommodate future growth in this area. Safe and efficient travel is a main goal, however, it is equally important that the roadway design consider the design guidelines developed in the *West Billings Plan*.

There will be a number of public meetings and workshops in the study area throughout the course of the project. The project team will share information about the project and will also ask the public for its ideas and concerns. Public input is vitally important in determining the new design for Shiloh Road.

Meetings and workshops will be publicized with the media and on flyers around town. For more information or to be placed on the project mailing list please contact Bruce Barrett, District Administrator, PO Box 20437, Billings, MT 59104, 406-657-0210.

To make special accommodations for persons with disabilities, please call (406) 444-7696 or TTY (800) 335-7592.

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Shiloh Road -EA  
STPU 1013(2)  
Control Number 4666

MDT attempts to provide accommodation for any known disability that may interfere with a person participating in any service, program or activity of the Department. Alternative accessible formats of this information will be provided upon request. For further information, call 406.444.7228 or TTY (800.335.7592) or call Montana Relay at 711.